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SECOND UPDATE OF THE

GEOGRAPHIC PRACTICE COST INDEX

Final Report

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EXECUTIVE SUMMARY

The Geographic Practice Cost Index (GPCI) is an input price index used to adjust Medicare Fee Schedule (MFS) payments for area variations in physicians' cost of practice. The original GPCI was implemented with the MFS in 1992. In 1995 and 1996, the GPCI was updated with 1990 Decennial Census data. This report documents the second update of the GPCI, which is scheduled to be fully phased in on January 1, 1999. In the previous year, 1998, a transition will occur between the 1997 GPCI and the updated 1999 GPCI, with one-half of the total change implemented in 1998.

1.0 CHANGES IN DATA AND METHODOLOGY BETWEEN THE 1999 AND 1997 GPCIS

Table ES-1 summarizes changes between the 1997 and 1999 GPCIs. There is no change in the physician work GPCI or the non-physician employee wage index of the practice expense GPCI except that they are reweighted with 1994 county relative value units (RVUs). The office rental index of the practice expense GPCI is updated with fiscal year 1996 Fair Market Rents published by the Department of Housing and Urban Development. In addition, county rental adjustment factors are eliminated for all metropolitan areas with the exception of the New York City Primary Metropolitan Statistical Area. The malpractice GPCI is updated with 1992, 1993, and 1994 premium data, and specialty premiums are weighted by national RVU proportions rather than allowed charges. There is no change in the GPCI cost shares, which measure the share of the various inputs in total practice revenues. The county RVUs used to weight averages of county input prices for each Fee Schedule Area are updated from 1992 to 1994.

The rationale for the changes, or lack of change, between the 1997 and 1999 GPCIs is as follows.

Work GPCI and Employee Wage Index

The physician work GPCI and employee wage index are based on 1990 Decennial Census wage data, which cannot be updated until data from the 2000 Census are available. We conducted a thorough search for other wage series that are available on a more frequent basis, and could provide update factors for the work GPCI and employee wage index. Two data series

were the most promising: the hospital wage data collected by the Health Care Financing Administration (HCFA) to calculate the Prospective Payment System hospital wage index ("the PPS wage data"), and the payroll per worker data collected by the U.S. Bureau of Labor Statistics from state unemployment insurance agencies ("the ES-202 data").

We obtained the most recent available years of these data as well as historical series. From this information, we computed changes in relative wages by state between 1989 and 1993 from each data series. The measured wage changes from the two data sources are only moderately correlated, and differ significantly for many states. Moreover, neither data series is entirely comparable in terms of occupational or industry composition to the GPCI wage indices, nor is either source entirely free of random and other measurement error. A previous analysis has shown that updating the Census wage indices with other wage series between Decennial Censuses is likely to improve their accuracy on average, but to degrade it for some particular areas, significantly in a few cases. The update factors we computed for the 1999 GPCI from the most reliable wage series were small, and would result in only minor changes in MFS payments were they applied.

We concluded that updating the GPCI wage indices with the most reliable available wage series would result in only small changes, but would undesirably introduce random noise into the GPCI indices. Therefore, we recommend no update to the GPCI wage indices between the 1997 and 1999 GPCIs, except for reweighting with 1994 county relative value units (RVUs). A separate analysis showed that changes in the GPCI wage indices between the 1980 and 1990 Censuses had only a modest impact on MFS payments, indicating that a 10 year update cycle based on the Decennial Census is acceptable. That is, the GPCI wage indices do not become unacceptably "out of date" between Decennial Censuses.

Office Rental Index

The office rental index used in the practice expense GPCI is based on "Fair Market Rents (FMRs)" published by the Department of Housing and Urban Development (HUD). We updated this index with the most recent final FMRs available, the fiscal year 1996 FMRs. HUD publishes the FMRs for metropolitan areas and non-metropolitan counties. In the 1995 and 1996 GPCIs, a county-specific rental adjustment was made for counties in large metropolitan areas based on a special tabulation of rents reported on the 1990 Decennial Census. These factors could not be updated, and further analysis of them revealed that they may lessen the accuracy of the office

rental index in some areas. For these reasons, we recommend that the county adjustment be eliminated in all metropolitan areas except New York City. We recommend that the county adjustment be retained in New York City because available evidence suggests that substantial variation in rents exists among the boroughs of New York City (each of which is a separate county), and that this variation is reflected by the county adjustment factors for the New York City metropolitan area.

Malpractice GPCI

The malpractice GPCI was updated with the most recent three years of malpractice premiums available from a survey of malpractice insurers conducted by a HCFA contractor. The most recent three years available are 1992, 1993, and 1994. The malpractice GPCI is an average of relative premiums for 20 of the highest-expenditure and most representative Medicare specialties. In previous GPCIs, specialty premiums in each county were averaged based on the national share of Medicare allowed charges accounted for by each specialty. Since the malpractice GPCI is used to adjust malpractice RVUs, it is more appropriate that the national specialty weights be based on each specialty's share of malpractice RVUs than allowed charges. Specialty premiums in the 1999 malpractice GPCI were averaged using national shares of malpractice RVUs as weights.

Cost Shares and County Relative Value Unit Weights

HCFA has made a policy decision to keep the GPCI cost shares consistent with those used in the Medicare Economic Index (MEI). The MEI cost shares are periodically updated by the Office of the Actuary at HCFA. Since the Office of the Actuary has not updated the MEI cost shares since the last GPCI update, the 1997 GPCI cost shares were retained for the 1999 GPCI. The county RVU weights used to create averages of county input prices for Fee Schedule Areas were updated to the most recent year available, 1994.

TABLE ES-1

SUMMARY OF CHANGES BETWEEN THE 1997 AND 1999 GEOGRAPHIC PRACTICE COST INDEX (GPCI)

	DATA SOURCE		
GPCI Component	1997	1999	**Comment**
Work GPCI	1990 Census	1990 Census	No change except reweighting with 1994 county RVUs
Practice Expense GPCI			
Employee Wage Index	1990 Census	1990 Census	No change except reweighting with 1994 county RVUs
Office Rental Index	FY 1994 HUD Fair Market Rents	FY 1996 HUD Fair Market Rents	County rental adjustment factors retained only for New York City PMSA
Malpractice GPCI	1990, 1991, 1992 Malpractice Insurance Premiums	1992, 1993, 1994 Malpractice Insurance Premiums	Specialty premiums weighted by RVUs instead of allowed charges
Cost Shares	1989 AMA SMS Survey	1989 AMA SMS Survey	No change
County RVU Weights	1992 National Claims History	1994 National Claims History	

NOTE:
RVU = relative value unit
FY = fiscal year
HUD = U.S. Department of Housing and Urban Development
PMSA = Primary Metropolitan Statistical Area
AMA = American Medical Association
SMS = Socioeconomic Monitoring System

SOURCE: Health Economics Research, Inc.

2.0 1999 GPCIS AND CHANGES IN THE GEOGRAPHIC ADJUSTMENT FACTOR BETWEEN 1999 AND 1997

Table ES-2 displays the 1999 quarter physician work GPCI, the practice expense GPCI, the malpractice GPCI, and the Geographic Adjustment Factor (GAF) by 1997 Medicare Fee Schedule Area (FSA). The GAF is a combination of the three GPCIs weighted by their average proportions of RVUs. It is a summary measure of geographic adjustments to the MFS payment for a service with typical proportions of work, practice expense, and malpractice RVUs. These GPCIs have not been adjusted for budget neutrality by the Office of the Actuary at HCFA, and so will differ slightly from the final budget neutral GPCIs published by HCFA in the *Federal Register*.

Table ES-3 shows differences between the 1999 and 1997 GAF by FSA, ranked in descending order of difference. Both the 1997 and 1999 GAFs are not adjusted for budget neutrality. Changes in MFS payments resulting from implementation of the 1999 GPCIs will be small. For each FSA, the change is less than 2.5 percent. All but 14 of the 89 FSAs will experience a change in payment of less than one percent. Seven areas will gain one percent to 2.4 percent in payment, and seven areas will lose one percent to 2.2 percent in payment. These small changes in the GAF are to be expected because its two largest components--the physician work GPCI and the employee wage index of the practice expense GPCI--were not updated other than being reweighted. The changes that do occur are primarily the result of the updated FMR rental data used in the office rental index of the 1999 practice expense GPCI, and the updated malpractice premium data used in the 1999 malpractice GPCI.

TABLE ES-2

1999 GEOGRAPHIC PRACTICE COST INDICES (GPCIs) AND GEOGRAPHIC ADJUSTMENT FACTOR (GAF) BY 1997 FEE SCHEDULE AREA
(ALPHABETICALLY BY STATE AND FSA NAME WITHIN STATE)

Carrier Number	Locality Number	State	Fee Schedule Area	Quarter Work GPCI	Practice Expense GPCI	Malpractice GPCI	GAF
00510	00	ALABAMA	ALABAMA	0.978	0.872	0.849	0.928
01020	01	ALASKA	ALASKA	1.063	1.172	1.486	1.128
01030	00	ARIZONA	ARIZONA	0.995	0.970	1.152	0.992
00520	13	ARKANSAS	ARKANSAS	0.953	0.855	0.391	0.886
02050	26	CALIFORNIA	ANAHEIM/SANTA ANA, CA	1.036	1.190	0.820	1.089
02050	18		LOS ANGELES, CA	1.055	1.198	0.820	1.102
00542	03		MARIN/NAPA/SOLANO, CA	1.014	1.160	0.646	1.056
00542	07		OAKLAND/BERKLEY, CA	1.040	1.195	0.646	1.085
00542	05		SAN FRANCISCO, CA	1.067	1.298	0.646	1.142
00542	06		SAN MATEO, CA	1.047	1.273	0.646	1.120
00542	09		SANTA CLARA, CA	1.062	1.261	0.646	1.124
02050	17		VENTURA, CA	1.027	1.130	0.695	1.053
02050	99	}	REST OF STATE*	1.008	1.042	0.677	1.006
00542	99						
00824	01	COLORADO	COLORADO	0.987	0.969	0.771	0.969
10230	00	CONNECTICUT	CONNECTICUT	1.049	1.171	1.020	1.098
00570	01	DELAWARE	DELAWARE	1.019	1.027	0.834	1.013
00580	01	DISTRICT OF COLUMBIA	DC + MD/VA SUBURBS	1.050	1.160	1.000	1.093
00590	03	FLORIDA	FORT LAUDERDALE, FL	0.996	1.025	1.728	1.043
00590	04		MIAMI, FL	1.015	1.076	2.278	1.101
00590	99		REST OF STATE	0.975	0.947	1.286	0.978
01040	01	GEORGIA	ATLANTA, GA	1.006	1.033	0.922	1.013
01040	99		REST OF STATE	0.970	0.899	0.922	0.939
01120	01	HAWAII/GUAM	HAWAII/GUAM	0.998	1.182	0.925	1.070
05130	00	IDAHO	IDAHO	0.960	0.891	0.549	0.912

TABLE ES-2

1999 GEOGRAPHIC PRACTICE COST INDICES (GPCIs) AND GEOGRAPHIC ADJUSTMENT FACTOR (GAF) BY 1997 FEE SCHEDULE AREA
(ALPHABETICALLY BY STATE AND FSA NAME WITHIN STATE)

Carrier Number	Locality Number	State	Fee Schedule Area	Quarter Work GPCI	Practice Expense GPCI	Malpractice GPCI	GAF
00621	16	ILLINOIS	CHICAGO, IL	1.027	1.087	1.641	1.081
00621	12		EAST ST. LOUIS, IL	0.988	0.930	1.441	0.986
00621	15		SUBURBAN CHICAGO, IL	1.006	1.066	1.323	1.046
00621	99		REST OF STATE	0.963	0.885	0.960	0.931
00630	00	INDIANA	INDIANA	0.981	0.916	0.395	0.926
00640	00	IOWA	IOWA	0.958	0.881	0.628	0.911
00650	00	KANSAS	KANSAS*	0.963	0.897	0.863	0.931
00740	04						
00660	00	KENTUCKY	KENTUCKY	0.970	0.874	0.782	0.922
00528	01	LOUISIANA	NEW ORLEANS, LA	0.998	0.949	1.118	0.984
00528	99		REST OF STATE	0.969	0.880	0.999	0.934
21200	03	MAINE	SOUTHERN MAINE	0.979	1.029	0.686	0.985
21200	99		REST OF STATE	0.961	0.923	0.686	0.932
00901	01	MARYLAND	BALTIMORE/SURR. CNTYS, MD	1.019	1.038	1.064	1.029
00901	99		REST OF STATE	0.985	0.985	0.839	0.978
00700	01	MASSACHUSETTS	METROPOLITAN BOSTON	1.039	1.195	0.691	1.086
00700	99		REST OF STATE	1.010	1.092	0.691	1.028
00623	01	MICHIGAN	DETROIT, MI	1.042	1.021	2.975	1.126
00623	99		REST OF STATE	0.996	0.938	1.772	1.009
10240	00	MINNESOTA	MINNESOTA	0.989	0.966	0.491	0.956
10250	00	MISSISSIPPI	MISSISSIPPI	0.957	0.846	0.699	0.899
00740	02	MISSOURI	METROPOLITAN KANSAS CITY, MO	0.988	0.948	1.159	0.980
11260	01		METROPOLITAN ST. LOUIS, MO	0.994	0.942	1.161	0.981
00740	99		REST OF STATE*	0.945	0.828	1.129	0.906
11260	99						

TABLE ES-2

1999 GEOGRAPHIC PRACTICE COST INDICES (GPCIs) AND GEOGRAPHIC ADJUSTMENT FACTOR (GAF) BY 1997 FEE SCHEDULE AREA
(ALPHABETICALLY BY STATE AND FSA NAME WITHIN STATE)

Carrier Number	Locality Number	State	Fee Schedule Area	Quarter Work GPCI	Practice Expense GPCI	Malpractice GPCI	GAF
00751	01	MONTANA	MONTANA	0.951	0.877	0.709	0.909
00655	00	NEBRASKA	NEBRASKA	0.949	0.873	0.429	0.893
01290	00	NEVADA	NEVADA	1.005	1.031	0.966	1.014
00780	40	NEW HAMPSHIRE	NEW HAMPSHIRE	0.988	1.032	0.982	1.006
00860	01	NEW JERSEY	NORTHERN NJ	1.057	1.190	0.771	1.098
00860	99		REST OF STATE	1.028	1.093	0.771	1.042
01360	05	NEW MEXICO	NEW MEXICO	0.973	0.909	0.694	0.933
00803	01	NEW YORK	MANHATTAN, NY	1.093	1.352	1.603	1.224
00803	02		NYC SUBURBS/LONG I., NY	1.067	1.232	1.873	1.173
00803	03		POUGHKPSIE/N NYC SUBURBS, NY	1.010	1.083	1.285	1.053
14330	04		QUEENS, NY	1.057	1.233	1.782	1.164
00801	99		REST OF STATE	0.999	0.958	0.769	0.971
05535	00	NORTH CAROLINA	NORTH CAROLINA	0.970	0.923	0.482	0.927
00820	01	NORTH DAKOTA	NORTH DAKOTA	0.950	0.877	0.636	0.905
16360	00	OHIO	OHIO	0.990	0.938	1.041	0.971
01370	00	OKLAHOMA	OKLAHOMA	0.969	0.881	0.437	0.907
01380	01	OREGON	PORTLAND, OR	0.996	1.020	0.569	0.985
01380	99		REST OF STATE	0.961	0.937	0.569	0.932
00865	01	PENNSYLVANIA	METROPOLITAN PHILADELPHIA, PA	1.024	1.088	1.170	1.057
00865	99		REST OF STATE	0.989	0.930	0.617	0.947
00973	20	PUERTO RICO	PUERTO RICO	0.882	0.729	0.348	0.794
00870	01	RHODE ISLAND	RHODE ISLAND	1.018	1.068	1.152	1.045
00880	01	SOUTH CAROLINA	SOUTH CAROLINA	0.975	0.904	0.271	0.912

TABLE ES-2

1999 GEOGRAPHIC PRACTICE COST INDICES (GPCIs) AND GEOGRAPHIC ADJUSTMENT FACTOR (GAF) BY 1997 FEE SCHEDULE AREA
(ALPHABETICALLY BY STATE AND FSA NAME WITHIN STATE)

Carrier Number	Locality Number	State	Fee Schedule Area	Quarter Work GPCI	Practice Expense GPCI	Malpractice GPCI	GAF
00820	02	SOUTH DAKOTA	SOUTH DAKOTA	0.935	0.873	0.422	0.885
05440	35	TENNESSEE	TENNESSEE	0.975	0.898	0.535	0.922
00900	31	TEXAS	AUSTIN, TX	0.986	0.999	0.823	0.984
00900	20		BEAUMONT, TX	0.992	0.898	1.343	0.970
00900	09		BRAZORIA, TX	0.992	0.976	1.343	1.002
00900	11		DALLAS, TX	1.010	1.015	0.901	1.007
00900	28		FORT WORTH, TX	0.987	0.970	0.901	0.976
00900	15		GALVESTON, TX	0.988	0.969	1.343	0.997
00900	18		HOUSTON, TX	1.020	1.006	1.374	1.031
00900	99		REST OF STATE	0.966	0.887	0.844	0.928
00910	09	UTAH	UTAH	0.977	0.908	0.576	0.929
00780	50	VERMONT	VERMONT	0.973	0.983	0.531	0.956
00973	50	VIRGIN ISLANDS	VIRGIN ISLANDS	0.965	1.033	1.000	0.995
10490	00	VIRGINIA	VIRGINIA	0.985	0.940	0.540	0.945
01390	02	WASHINGTON	SEATTLE (KING CNTY), WA	1.005	1.079	0.719	1.022
01390	99		REST OF STATE	0.982	0.975	0.719	0.967
16510	16	WEST VIRGINIA	WEST VIRGINIA	0.963	0.853	1.072	0.923
00951	00	WISCONSIN	WISCONSIN	0.981	0.932	0.815	0.953
00825	21	WYOMING	WYOMING	0.967	0.894	0.683	0.923

* Payment locality is serviced by two carriers.

NOTE: Not adjusted for budget neutrality.

SOURCE: Health Economics Research, Inc.

TABLE ES-3

1999 VERSUS 1997 GEOGRAPHIC ADJUSTMENT FACTOR (GAF) BY 1997 FEE SCHEDULE AREA
(IN DESCENDING ORDER OF DIFFERENCE)

Carrier Number	Locality Number	Fee Schedule Area	GAF 1999	GAF 1997	Difference	Percent Difference
00973	50	VIRGIN ISLANDS	0.995	0.972	0.023	2.4 %
00621	16	CHICAGO, IL	1.081	1.064	0.017	1.6
00901	99	REST OF MARYLAND	0.978	0.962	0.016	1.7
00621	12	EAST ST. LOUIS, IL	0.986	0.972	0.014	1.4
00528	99	REST OF LOUISIANA	0.934	0.924	0.010	1.1
00528	01	NEW ORLEANS, LA	0.984	0.975	0.009	0.9
00820	01	NORTH DAKOTA	0.905	0.896	0.009	1.0
00621	99	REST OF ILLINOIS	0.931	0.922	0.009	1.0
00900	31	AUSTIN, TX	0.984	0.977	0.007	0.7
00803	02	NYC SUBURBS/LONG I., NY	1.173	1.166	0.007	0.6
00820	02	SOUTH DAKOTA	0.885	0.878	0.007	0.8
01290	00	NEVADA	1.014	1.008	0.006	0.6
01380	01	PORTLAND, OR	0.985	0.979	0.006	0.6
00803	03	POUGHKPSIE/N NYC SUBURBS, N	1.053	1.047	0.006	0.6
00900	99	REST OF TEXAS	0.928	0.922	0.006	0.7
01390	99	REST OF WASHINGTON	0.967	0.961	0.006	0.6
16510	16	WEST VIRGINIA	0.923	0.917	0.006	0.7
00824	01	COLORADO	0.969	0.964	0.005	0.5
00780	40	NEW HAMPSHIRE	1.006	1.001	0.005	0.5
05535	00	NORTH CAROLINA	0.927	0.922	0.005	0.5
01040	99	REST OF GEORGIA	0.939	0.934	0.005	0.5
01040	01	ATLANTA, GA	1.013	1.009	0.004	0.4
00751	01	MONTANA	0.909	0.905	0.004	0.4
14330	04	QUEENS, NY	1.164	1.160	0.004	0.3
00910	09	UTAH	0.929	0.925	0.004	0.4
01020	01	ALASKA	1.128	1.125	0.003	0.3
00900	11	DALLAS, TX	1.007	1.004	0.003	0.3
05130	00	IDAHO	0.912	0.909	0.003	0.3
00780	50	VERMONT	0.956	0.953	0.003	0.3
10490	00	VIRGINIA	0.945	0.942	0.003	0.3
00900	09	BRAZORIA, TX	1.002	1.000	0.002	0.2
00630	00	INDIANA	0.926	0.924	0.002	0.2
00660	00	KENTUCKY	0.922	0.920	0.002	0.2
00803	01	MANHATTAN, NY	1.224	1.222	0.002	0.2
10250	00	MISSISSIPPI	0.899	0.897	0.002	0.2
00640	00	IOWA	0.911	0.910	0.001	0.1
02050	18	LOS ANGELES, CA	1.102	1.101	0.001	0.1
00973	20	PUERTO RICO	0.794	0.793	0.001	0.1
01390	02	SEATTLE (KING CNTY), WA	1.022	1.021	0.001	0.1
05440	35	TENNESSEE	0.922	0.921	0.001	0.1
00520	13	ARKANSAS	0.886	0.886	0.000	0.0
00900	20	BEAUMONT, TX	0.970	0.970	0.000	0.0
00570	01	DELAWARE	1.013	1.013	0.000	0.0
00590	03	FORT WORTH, TX	0.976	0.976	0.000	0.0
00900	18	HOUSTON, TX	1.031	1.031	0.000	0.0
00655	00	NEBRASKA	0.893	0.893	0.000	0.0
16360	00	OHIO	0.971	0.971	0.000	0.0
02050	99	REST OF CALIFORNIA*	1.006	1.006	0.000	0.0
00542	99					
01380	99	REST OF OREGON	0.932	0.932	0.000	0.0
00825	21	WYOMING	0.923	0.923	0.000	0.0
02050	26	ANAHEIM/SANTA ANA, CA	1.089	1.090	-0.001	-0.1
01030	00	ARIZONA	0.992	0.993	-0.001	-0.1
00901	01	BALTIMORE/SURR. CNTYS, MD	1.029	1.030	-0.001	-0.1

TABLE ES-3

1999 VERSUS 1997 GEOGRAPHIC ADJUSTMENT FACTOR (GAF) BY 1997 FEE SCHEDULE AREA
(IN DESCENDING ORDER OF DIFFERENCE)

Carrier Number	Locality Number	Fee Schedule Area	GAF 1999	GAF 1997	Difference	Percent Difference
00900	15	GALVESTON, TX	0.997	0.998	-0.001	-0.1
00740	02	METROPOLITAN KANSAS CITY, M	0.980	0.981	-0.001	-0.1 %
11260	01	METROPOLITAN ST. LOUIS, MO	0.981	0.982	-0.001	-0.1
00623	99	REST OF MICHIGAN	1.009	1.010	-0.001	-0.1
00801	99	REST OF NEW YORK	0.971	0.972	-0.001	-0.1
00621	15	SUBURBAN CHICAGO, IL	1.046	1.047	-0.001	-0.1
00510	00	ALABAMA	0.928	0.930	-0.002	-0.2
01360	05	NEW MEXICO	0.933	0.935	-0.002	-0.2
01370	00	OKLAHOMA	0.907	0.909	-0.002	-0.2
00865	99	REST OF PENNSYLVANIA	0.947	0.949	-0.002	-0.2
00880	01	SOUTH CAROLINA	0.912	0.914	-0.002	-0.2
10240	00	MINNESOTA	0.956	0.959	-0.003	-0.3
21200	99	REST OF MAINE	0.932	0.935	-0.003	-0.3
00740	99	REST OF MISSOURI*	0.906	0.909	-0.003	-0.3
11260	99					
00590	99	REST OF FLORIDA	0.978	0.982	-0.004	-0.4
00542	03	MARIN/NAPA/SOLANO, CA	1.056	1.061	-0.005	-0.5
00542	07	OAKLAND/BERKLEY, CA	1.085	1.090	-0.005	-0.5
21200	03	SOUTHERN MAINE	0.985	0.990	-0.005	-0.5
10230	00	CONNECTICUT	1.098	1.104	-0.006	-0.5
00865	01	METROPOLITAN PHILADELPHIA, P	1.057	1.063	-0.006	-0.6
00623	01	DETROIT, MI	1.126	1.133	-0.007	-0.6
00860	99	REST OF NEW JERSEY	1.042	1.049	-0.007	-0.7
00542	06	SAN MATEO, CA	1.120	1.128	-0.008	-0.7
00542	09	SANTA CLARA, CA	1.124	1.132	-0.008	-0.7
00900	28	FORT LAUDERDALE, FL	1.043	1.052	-0.009	-0.9
00860	01	NORTHERN NJ	1.098	1.107	-0.009	-0.8
00542	05	SAN FRANCISCO, CA	1.142	1.151	-0.009	-0.8
00580	01	DC + MD/VA SUBURBS	1.093	1.103	-0.010	-0.9
00590	04	MIAMI, FL	1.101	1.111	-0.010	-0.9
00700	99	REST OF MASSACHUSETTS	1.028	1.038	-0.010	-1.0
00650	00	KANSAS*	0.931	0.943	-0.012	-1.3
00740	04					
00951	00	WISCONSIN	0.953	0.965	-0.012	-1.2
01120	01	HAWAII/GUAM	1.070	1.083	-0.013	-1.2
00700	01	METROPOLITAN BOSTON	1.086	1.106	-0.020	-1.8
00870	01	RHODE ISLAND	1.045	1.065	-0.020	-1.9
02050	17	VENTURA, CA	1.053	1.077	-0.024	-2.2

* Payment locality is serviced by two carriers.

NOTE: Not adjusted for budget neutrality.

SOURCE: Health Economics Research, Inc.

SECOND UPDATE OF THE GEOGRAPHIC PRACTICE COST INDEX

1.0 INTRODUCTION

The Geographic Practice Cost Index (GPCI) is an input price index used to adjust Medicare Fee Schedule (MFS) payments for area variations in physicians' cost of practice. This report discusses the second update of the GPCI, which will be fully phased in on January 1, 1999. In the previous year, 1998, a transition will occur between the current GPCI and the updated GPCI, with one-half of the total change implemented in 1998. This introductory chapter begins by providing background on the GPCI in Section 1.1. Then several elements of the GPCI computation that underlie the rest of the report are discussed in Sections 1.2 through 1.5. An overview of the remainder of the report is contained in Section 1.6.

1.1 Background on the Geographic Practice Cost Index

1.1.1 Structure and Role of the GPCI in the Medicare Fee Schedule

The GPCI has seven components corresponding to categories of physician practice expenses, which are presented in Table 1-1. Each component has an associated cost share, or weight, in the index, which are also shown in Table 1-1. The GPCI contains geographic indices of relative prices for four practice inputs: physician work, non-physician employee work, office space, and malpractice insurance. The sources of these input price indices are indicated in Table 1-1. No measures of geographic variation in the price of supplies, equipment, and miscellaneous inputs are available.

For payment purposes, the categories are grouped into three GPCIs:

(1) the physician work GPCI;
(2) the practice expense GPCI, and
(3) the malpractice insurance GPCI.

Congress specified that one-quarter of the variation in the physician work GPCI be used to adjust MFS payments:

$$\text{quarter work GPCI} = 1 + \frac{\text{full work GPCI} - 1}{4}$$

TABLE 1-1

GEOGRAPHIC PRACTICE COST INDEX COMPONENTS, COST SHARES, AND INPUT PRICE MEASURES

Component	Cost Share	Geographic Input Price Measure
Physician Work (Net Income)	54.2 %	Median professional hourly earnings from the Decennial Census
Non-Physician Employee Compensation	16.3	Median hourly earnings of administrative support personnel, nurses, and medical technicians from the Decennial Census
Office Rental	10.3	Fair Market apartment rents from the U.S. Department of Housing and Urban Development
Malpractice Insurance	4.8	HCFA survey of malpractice insurance premiums
Medical Supplies	5.2	None
Medical Equipment	2.3	None
Other	6.9	None
	100.0	

SOURCE: Health Economics Research, Inc.

The practice expense GPCI is comprised of the non-physician employee wage, office rental, medical supplies, medical equipment, and miscellaneous expense categories according to the following formula[1]:

$$\text{practice expense GPCI} = 0.398 \cdot (\text{employee wage index}) + 0.251 \cdot (\text{office rental index}) + 0.351,$$

where 0.351 is the share of supplies, equipment, and miscellaneous expenses in the practice expense GPCI.

The three GPCIs are used to adjust MFS payments in each geographic Fee Schedule Area according to the formula:

MFS payment for service i provided in Fee Schedule Area j =

$$RVU_{w,i} \cdot GPCI_{w,j} + RVU_{pe,i} \cdot GPCI_{pe,j} + RVU_{m,i} \cdot GPCI_{m,j},$$

where

$RVU_{w,i}$, $RVU_{pe,i}$, and $RVU_{m,i}$ are the work, practice expense, and malpractice RVUs for service i, respectively, and $GPCI_{w,j}$, $GPCI_{pe,j}$, and $GPCI_{m,j}$ are the quarter work, practice expense, and malpractice GPCIs for Fee Schedule Area j, respectively.

The sum of the three GPCIs, weighted by their shares in the overall index, is known as the Geographic Adjustment Factor, or GAF:

$$GAF = 0.542 \cdot GPCI_w + 0.410 \cdot GPCI_{pe} + 0.048 \cdot GPCI_m.$$

The GAF is not used in MFS payments. Rather, it provides a summary measure (for a typical service) of the relative geographic payment level in an area. The geographic adjustment for any actual service will deviate from the GAF to the extent that the service's proportions of work, practice expense, and malpractice RVUs differ from those of the GAF.

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[1] The weights used in the practice expense GPCI are not legislated, but are revised when the GPCI cost shares are revised. The weights shown are the 1997 weights and will also be used in the 1999 GPCI since the weights are not being updated (see Section 1.2).

1.1.2 History of the GPCI

The GPCI was developed in the late 1980s and implemented with the Medicare Fee Schedule in 1992. The original GPCI used the following data for its four component indices (Welch, Zuckerman, and Pope, 1989):

- Physician work: median hourly professional earnings from the 1980 Decennial Census;
- Non-physician employee wages: median hourly earnings of clerical personnel, registered and licensed practical nurses, and medical technicians from the 1980 Decennial Census;
- Office rental: Fiscal year (FY) 1987 Fair Market apartment rents produced by the U.S. Department of Housing and Urban Development (HUD); and
- Malpractice insurance premiums: 1985 and 1986 premiums from a Health Care Financing Administration (HCFA) survey of insurers.

The original GPCI's cost shares were computed from 1987 American Medical Association (AMA) Socioeconomic Monitoring System (SMS) survey data. Geographic averages were weighted by county population.

In 1995 and 1996, the GPCI underwent a major update utilizing 1990 Census and other data (Pope and Dayhoff, 1994; Pope *et al.*, 1994; Zuckerman and Norton, 1994). One half of the change in the revised GPCI was implemented January 1, 1995, with transition to the final GPCIs on January 1, 1996. The following data were used in this first update of the GPCI:

- Physician work: median hourly professional earnings from the 1990 Decennial Census;
- Non-physician employee wages: median hourly earnings of administrative support personnel, registered and licensed practical nurses, and medical technicians from the 1990 Decennial Census;
- Office rental: Fiscal Year (FY) 1994 Fair Market apartment rents produced by the Department of Housing and Urban Development; and
- Malpractice insurance premiums: 1990, 1991, and 1992 premiums from a HCFA/Urban Institute survey of insurers.

The updated GPCI cost shares were computed by the Office of the Actuary at HCFA using 1989 AMA SMS data. Geographic averages were weighted by 1992 county relative value units.

For 1997, there was no change in the data underlying the GPCIs. However, HCFA enacted a major reorganization of the Medicare Fee Schedule Areas (FSAs) that takes effect January 1, 1997 (Federal Register/Vol. 61, No. 227/November 22, 1996). This change in geographic basis alters GPCIs in many areas significantly. We discuss and describe the new FSAs in more detail in Section 1.3 below.

1.1.3 Second Update of the GPCI

By law, HCFA is required to review and update the GPCI every three years. The purpose of updating is to maintain a GPCI that accurately measures current differences across areas in physicians' cost of practice. The last update of the data underlying the GPCI occurred in 1996, with the change in the Fee Schedule Areas for 1997. HCFA contracted with Health Economics Research, Inc. to undertake the second update of the GPCI, which will be fully implemented on January 1, 1999. By law, one-half of the change between the 1997 GPCI and the 1999 GPCI will occur in 1998, with the remaining half occurring between 1998 and 1999. That is, the 1998 GPCI will be the arithmetic average of the 1999 and 1997 GPCIs.

We now discuss several issues in the GPCI computation that will serve as background to the rest of the report. Then, in Section 1.6, we provide an overview of the remainder of the report.

1.2 Cost Shares

As part of the first update of the GPCI, HCFA made a policy decision to keep the GPCI cost shares consistent with those of the Medicare Economic Index or MEI (Dayhoff, Schneider, and Pope, 1994). The MEI is used to construct the annual market basket update for Medicare physician payments. Through this policy, the cost shares of HCFA's two major indices of physician input prices will be consistent: the GPCI, which measures geographic variation in input prices, and the MEI, which measures inflation in input prices. The MEI cost shares are

periodically updated by HCFA's Office of the Actuary (OACT). Since OACT has not updated the MEI shares since the last GPCI update in 1996, we have used the same cost shares to construct the 1999 GPCI as were used for the 1996 and 1997 GPCIs. These cost shares are shown in Table 1-1.

1.3 Fee Schedule Areas

The GPCI is defined for geographic areas with varying levels of input prices. Historically, these areas were known as the "Medicare payment localities". Prior to implementation of the MFS in 1992, there were 240 such areas. By 1995, the number of payment localities had fallen to 210 as several multi-locality states combined into single statewide areas. HCFA contracted with Health Economics Research, Inc. (HER) to evaluate options to revise the Medicare payment localities. HER's final report to HCFA was submitted on November 1, 1995 (Pope, Tarantino, Dayhoff, and Hwang, 1995).

Based on one of the options analyzed in HER's report, HCFA adopted 89 "Fee Schedule Areas", or FSAs, to be implemented on January 1, 1997 (Federal Register/Vol. 61, No. 227/November 22, 1996). The FSAs establish statewide areas except in cases where input prices in an existing payment locality are sufficiently greater than those of lower-price payment localities in a state. Under HCFA's revised system, 34 states have a single statewide FSA; the District of Columbia together with surrounding counties in Maryland and Virginia is a FSA; Puerto Rico and the Virgin Islands are each a FSA; and 16 states have multiple FSAs. The 89 FSAs are listed alphabetically by state with constituent counties in Appendix B. Generally, in multi-FSA states, the larger, higher-price metropolitan areas remain distinct FSAs, with the rest of the state grouped into a single FSA.

We use the 1997 FSAs as the geographic basis for the text tables in this report. Appendix A also contains tables of the indices by state because HCFA has a policy of allowing states to become a single statewide FSA if there is "overwhelming support" from physicians in the state (Federal Register, /Vol. 61, No. 128/ July 2, 1996).

1.4 Relative Value Unit Weights

Each Fee Schedule Area's GPCIs are derived from a county file of input prices. Average input prices for a Fee Schedule Area are divided by national average input prices to create index values. To create average input prices for FSAs, and for the nation as a whole, county prices are averaged weighted by county relative value units (RVUs). Weights are used to reflect the frequency of Medicare services provided in different counties. RVUs are the weights because the GPCIs are used to adjust RVUs in the Medicare Fee Schedule payment formula. The work GPCI is weighted by work RVUs, the practice expense GPCI by practice expense RVUs, and the malpractice GPCI by malpractice RVUs.

The 1997 GPCIs are weighted by calendar year 1992 county RVUs. For the 1999 GPCIs, work, practice expense, and malpractice county RVU weights for calendar year 1994 were derived from HCFA's 1994 National Claims History Physician Zipcode Summary File. Each of the 62,035 observations in the file consists of an unique combination of physician zip code, Medicare carrier and locality number, and the year that the expenditure was incurred. HCFA used the zip code to assign FIPS state and county designations using a July, 1995 U.S. Postal Service zip code to county crosswalk. There were 2,001 observations (3.2 percent) for which no matching zip codes could found on the Postal Service file. Details on our strategy for assigning non-matching zip codes to counties and for dealing with other problems in the data are in Appendix C.

1.5 Budget Neutrality Adjustment

The final step in the computation of the GPCIs is adjustment for budget neutrality. This adjustment is made by the Office of the Actuary at HCFA so that implementation of a new GPCI does not affect the overall level of Medicare payments. In practice, OACT calculates factors by which each of the three GPCIs--work, practice expense, and malpractice--are multiplied to ensure neutrality.

At the time Health Economics Research, Inc. calculated the 1999 GPCIs (fall 1996), OACT was not yet prepared to compute the appropriate budget neutrality factors for the 1999 GPCIs. Therefore, all 1999 GPCIs and GAFs presented in this report <u>are not adjusted for budget neutrality</u>. Comparisons of the 1999 with the 1997 GPCIs and GAF are made to examine changes

in the indices. To make these comparisons meaningful, the 1997 indices are also not adjusted for budget neutrality. This normalizes the 1999 and 1997 indices comparably. The unadjusted 1999 and 1997 GPCIs and GAF presented in this report will differ from the budget-neutral GPCIs and GAF published by HCFA in the *Federal Register*. However, the budget neutral adjustment factors are generally small, so the differences between the indices reported here and the final budget-neutral numbers are not large. In many cases, only the third decimal place of an index is affected by the budget neutrality adjustment, and then only by one unit.

All indices in this report are normalized to relative-value-unit-weighted national averages excluding Puerto Rico, the Virgin Islands, and Guam. This normalization has been carried forward for consistency with earlier GPCIs. However, since all three GPCIs are renormalized by OACT for budget neutrality, the particular normalization chosen for this report has no influence on the final GPCIs implemented by HCFA.

1.6 Overview of the Report

The remainder of the report is organized into four chapters and three appendices. Chapter 2 presents our analysis of updating the physician work GPCI and the employee wage index, and explains our recommendation that they not be updated.[2] Chapter 3 is an analysis of updating the office rental index, and includes discussions of more recent data and methodological changes. Chapter 4 is an analysis of updating the malpractice GPCI, which also includes discussions of new data and methodological refinements. Chapter 5 presents and discusses changes in the 1999 versus 1997 practice expense GPCI and in the GAF.

The text analysis focuses on HCFA's 1997 Fee Schedule Areas as the geographic unit, and on changes from 1997 to 1999 in the indices. In the text tables, FSAs are ranked in descending order of their 1997 to 1999 change. In Appendix A, tables are presented in alphabetical order by state, and FSA name within state. Appendix A also presents tables of indices by state. Appendix B lists HCFA's 1997 Fee Schedule Areas with constituent counties. Appendix C gives details on the construction of 1994 county relative value weights.

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[2] Except for reweighting with 1994 instead of 1992 relative value unit weights.

2.0 PHYSICIAN WORK GPCI AND EMPLOYEE WAGE INDEX

The physician work GPCI and employee wage index are both derived from Decennial Census earnings data. Because the issues in updating them are very similar, we discuss them together in this chapter. The physician work GPCI is composed of the median hourly earnings by area of "professional specialty occupations" (excluding physicians) as defined by the U.S. Bureau of the Census. This occupational classification includes teachers, engineers, and lawyers, among others (see Pope and Dayhoff, 1994). The employee wage index includes the median hourly earnings by area of administrative support personnel (secretaries, receptionists, office managers, etc.), registered nurses, licensed practical nurses, and medical technicians (see Pope *et al.*, 1994).

The work GPCI and employee wage index are updated every ten years with new Decennial Census data. This last occurred in 1995/1996 as part of the first update of the GPCI, when earnings data from the 1990 Census replaced the 1980 Census data used in the 1992 (original) GPCI. For the second update of the GPCI considered in this report, new Census data are unavailable. Thus, in Section 2.1, we first consider data that might be used to update the Census wage series between Decennial Censuses. We conclude that unemployment insurance payroll data collected by the U.S. Bureau of Labor Statistics (the "ES-202" data) and hospital wage data collected by HCFA ("the PPS wage data") are the two most promising update series. In Section 2.2, we present and evaluate update factors computed from these data sources. We conclude that neither series provides acceptable update factors for the GPCI. Hence, in Section 2.3, we consider the alternative of not updating the Census wage series by evaluating how inaccurate they become in the years between Decennial Censuses. Section 2.4 discusses our recommendation not to update the Census wage series However, we do recommend reweighting the wage series with 1994 county relative value unit weights to be consistent with the other components of the GPCI. The minor changes from reweighting are discussed in Section 2.5.

2.1 Data to Update the Census Wage Indices Between Decennial Censuses

Desirable attributes for a data source to update the work GPCI and employee wage index are:

- measure earnings, wages, or total compensation in a statistically reliable fashion (which requires large sample sizes);
- measure earnings adjusted for hours worked, or at least full-time/part-time worker mix;
- measure the earnings of professional occupations (work GPCI) or physician office employees (employee wage index);
- be available at disaggregated geographic detail such as states, metropolitan areas (MSAs), or counties;
- be available with a short time lag;
- measure earnings for an appropriate industry grouping, or at least not be dominated by industries dissimilar to health services, such as manufacturing;
- measure the earnings of a constant mix of occupations over time; and
- be as similar to the Decennial Census as possible in sample selection and questionnaire.

Table 2-1 lists data sources that are candidates for updating the Census wage indices between Censuses, and some of their characteristics. The ES-202 earnings data are derived from unemployment insurance records reported to state agencies, and consist of total payroll divided by counts of wage and salary workers. ES-202 data were used to construct the original hospital wage index used in Medicare's Prospective Payment System (PPS). Its advantages are that it is a virtual census of all employers, it can be disaggregated by detailed industry, it is available with a short time lag, and, subject to confidentiality restrictions, it can be disaggregated to the county. ES-202 dominates the similar Bureau of the Census County Business Patterns data which is only available with a two to three-year lag. Its major disadvantages are that it does not measure hourly earnings, only payroll per employee, and no occupational detail is available. The lack of adjustment for part-time/full-time and hours worked was the major reason it was eventually replaced as the source of the PPS hospital wage index. In addition, numbers of workers in

TABLE 2-1

DATA TO UPDATE CENSUS WAGE INDICES

Data Source	Definition	Geographic Disaggregation	Time Lag	Standard Error	Occupational Detail	Industry Detail	Comment
U.S. Bureau of Labor Statistics: ES-202 Data	Peyroll per wage and salary worker	State and county, subject to confidentiality restrictions	8-9 months	No sampling error (census)	None	Detailed industry breakdown (4-digit SIC)	No control for hours worked or occupation mix chenges
U.S. Bureau of Labor Statistics: Current Population Survey	Self-reported earnings and hours worked	Stete or below	< 6 months	Large	Deteiled occupations	Detailed industries	Inedequate sample size for geographic enelysis
U.S. Bureau of Labor Statistics: Current Employment Statistics Survey	Average hourly earnings of production workers on manufacturing payrolls	By state and lerge MSAs	< 2 months		None	Manufecturing Industries only	
U.S. Department of Commerce, Bureau of Economic Analysis: Personal Per Capita Income	Total personal income divided by population	Stete and county	8-9 months		None	None	Reflects chenges in unemployment and wages emong those remeining employed. Includes non-lebor income.
U.S. Internal Revenue Service: (SOI) Tax Return Data	For each practice type: Taxable gross and net income end expense components	State, subject to confidentiality restrictions	Requires special tabs by the IRS and there may be a lag of severel years		None	Deteiled industry breakdown (4-digit SIC)	No control for weeks or hours worked or for number of workers
U.S. Bureau of Labor Statistics: Employment Cost Index	Measures changes in total employer labor costs per hour	Only 4 regional update factors ere eveilable	< 6 months		None	Deteiled industry breekdown	
U.S. Health Care Financing Administration: PPS Hospital Wage Index	Average hourly total compensetion of hospital workers	MSA / state non-metro aree	About 3 years	No sampling error (census)	None	Hospitals only	Subject to random fluctuetion in small MSAs, mey be more relieble et stete level.
U.S. Bureau of the Census: County Business Patterns	Similer to ES - 202	County	2 - 3 years	No sampling error (census)	None	Detailed industry breakdown	Domineted by ES - 202, which is availeble sooner.
U.S. Bureau of Labor Statistics: Occupational Compensation Survey	Straight-time hourly eernings (does not include overtime, bonuses, etc.)	Incomplete geographic coverage (about 150 areas), mostly larger metro. areas	1- 2 years		Professionel, edminlstrative, clerical, end certeln other occupations	Privete industries end state/local government	
U.S. Bureau of Labor Statistics: Consumer Price Index	Measures changes in consumer prices	MSA population categories by 4 census regions	< 2 months		N.A.	N.A.	Price rather than wage measure.

particular industries are small for certain states, e.g., Wyoming and Vermont, leading to unstable estimates of payroll per worker. There was also a discontinuity in the ES-202 data during the late 1980s and early 1990s. Payroll checks, instead of unique workers, were counted by some of the then new data processing contractors for the ES-202 data. ES-202 data for some industries, then, contains overstated counts of the number of workers on payroll which leads to understated estimates of wages and salary per worker. Since the exact magnitude of the miscounting is not known, corrective adjustments may not yield revised estimates of wages and salary per worker with the desired precision.

The Current Population Survey (CPS) is a monthly survey conducted by the Census Bureau and the Bureau of Labor Statistics (BLS). Although more detailed than the Census "long form" questionnaire, it is similar in most respects to the Decennial Census. Unfortunately, its sample size is much smaller than the Census, making CPS earnings estimates unreliable for sub-national areas. Although earnings by occupation can be measured with the raw CPS computer tapes, choosing specific occupations (e.g., professionals or employees of physician offices) further reduces the already small sample size. The conclusion of a previous analysis of CPS professional earnings by region as an update to the physician work GPCI was that several years of CPS data would have to be merged to create update factors by region, and even then, significant random variation remained (Welch, Zuckerman, and Pope, 1989). BLS formerly annually published usual weekly earnings of employed wage and salary workers who usually work full time for the nine Census Divisions and the 10 most populous states. However, this series is no longer published because budget cuts have reduced the size of the CPS sample, and BLS no longer believes these sub-national estimates are reliable.

The BLS conducts three other surveys that provide wage data for geographic areas: the Current Employment Statistics (CES) survey, the Employment Cost Index (ECI) survey, and the Occupational Compensation Survey (OCS--formerly the Area Wage Survey). The CES is a joint Federal/State survey in which State employment security agencies prepare data using procedures specified by BLS. The survey is based on payroll records of a sample of non-farm establishments. In March 1993, the sample included over 390,000 establishments employing over 47 million wage and salary workers. Data are collected monthly for all 50 states, Puerto Rico and the Virgin Islands. The primary disadvantage of the CES is that the only wage series tabulated

for sub-national areas (states and selected metropolitan areas) is production workers on manufacturing payrolls. Changes in manufacturing wages may not be very highly correlated with changes in the wages of professionals or physician office employees.

The ECI is tabulated from a sample survey of establishments. The survey covers all occupations within the private economy (excluding farms, households, and the self-employed) and the public sector (excluding the federal government). In March 1991, the ECI sample included about 23,000 occupations within 4,400 firms in the private sector, and about 8,700 occupations within 1,300 establishments in the public sector. A very significant drawback of the ECI is that it is only available for the four Census regions, an inadequate level of geographic detail.

Pay relatives (indices) for local areas by occupation are produced from the OCS. The surveyed occupations include professional and clerical occupations, but medical occupations are not regularly surveyed. All non-farm industries are within the scope of the survey, but only firms employing 50 or more workers are in the sample, excluding establishments of the typical size of physician offices. OCS surveys include areas in most, but not all states. Typically one or a few of the largest metropolitan areas in each state are surveyed, but data for all occupations is not published for each area. Very few non-metropolitan counties are surveyed. The limited geographic coverage of the OCS is a significant disadvantage because the GPCI must be computed for all areas. Moreover, nationally consistent pay relatives have only been published since 1992, although BLS intends to publish them annually for the foreseeable future.

Earnings data reported on business tax returns to the Internal Revenue Service (IRS) are available with about a two-year lag through a special arrangement with the IRS. State-level 1993 data by industry are available from tax returns from corporations, partnerships, and sole proprietorships. Occupational-level data is not presented, but can in some instances be imputed. The IRS industry classification system is similar to that of the BLS ES-202 system and includes, for example, offices of physicians and osteopaths, offices of dentists, offices of other health care practitioners, hospitals, legal services, and accounting services. The data for corporations and partnerships includes total income, salaries and wages, and total deductions (expenses), while total income and total deductions are the only data elements available for sole proprietorships. Prior to 1993, total income and total deductions were the only data elements available for all three types of business organization. With only one year of detailed information available, IRS data cannot be used at this time to update either the work GPCI or the employee wage index

component of the practice expense GPCI. The rest of our discussion of IRS data evaluates its potential for providing future update factors.[1]

Physician salaries in the corporation tax returns are intermingled with those of other health care workers. There is relatively little physician income, in the partnership tax returns, that is intermingled with that of other health care workers. For partnerships, most physician income is in the difference between total income and total deductions. For partnerships, physician income should only be present in the salaries and wages when other physicians are employees of the partners. Neither physician income nor wages and salaries are available in the sole proprietorship data.[2] Similar limitations are present in the data for legal and accounting services (the sources of the exogenous opportunity income for physicians used in the physician work GPCI). Therefore, aside from partnership tax returns, wages and salaries of non-physicians cannot be separated from physician salaries or income. The number of partnership tax returns, nationally, is lower than those from corporations and sole proprietorships. The number of tax returns for offices of physicians and osteopaths is 7,894 for partnerships compared to 118,597 for corporations and 189,355 for sole proprietorships. Thus data from partnership tax returns may not be representative of all physician practices nor may be sufficiently numerous in some states to ensure statistical accuracy. Similar problems exist for legal and accounting services. The number of tax returns for legal services is 27,350 for partnerships compared to 57,367 for corporations and 250,360 for sole proprietorships. The number of tax returns for accounting services (of all types) is 11,100 for partnerships compared to 38,678 for corporations and 276,776 for sole proprietorships.

Even if the incomes of physicians, lawyers, and accountants (CPAs) could be separated from the wages and salaries of their staffs, there are other serious limitations with the IRS data. Self-employed lawyer or CPA income includes an entrepreneurial return in addition to the opportunity cost of time (Pope and Dayhoff, 1994). Even more seriously, no control for hours worked is available to deflate business expenses for wages and salaries, nor is there any information on number and occupational mix of employees. The IRS is attempting to obtain from the Census Bureau, tabulations of the number of employees working in each of the industry

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[1] As this report was being written, 1994 IRS data became available. For the current GPCI update, however, comparable baseline data from 1989 is necessary.

[2] The level of detail available for sole proprietorships is due to limitations in the IRS master file.

classifications for each state. Even if the Census Bureau is able to provide such data, questions remain about its comparability to the IRS data. IRS data is currently available only at the state level. In the future, however, it might be available at the Fee Schedule Area level. Thus, at the present time, it does not appear that the quality of IRS data is sufficient, even if annually available, for updating the work GPCI and the employee wage index. If the following improvements can be made, then IRS data might be usable for updating purposes:

- separation of physician income from non-physician employee wages and salaries;
- obtain a reliable count of employees (if not hours); and
- obtain more detailed data from sole proprietorships.

Per capita income is a possible update factor, but it incorporates non-labor income and also is sensitive to changes in the unemployment rate. The BLS Consumer Price Index (CPI) was considered by Welch, Zuckerman, and Pope (1989) as an update factor for the GPCI. The major disadvantages of the CPI are that it is only available by MSA population sizes for the four Census regions, and it is a price, not a wage measure.

PPS hospital wage data[3] is a candidate for providing GPCI wage update factors. It was rejected as the actual basis for the work GPCI or employee wage index because of its lack of an occupation mix correction and its unrepresentative occupational composition (hospital employees rather than professionals or physician office employees--see Zuckerman, Welch, and Pope, 1987). These are also disadvantages for update factors. The data are also only available with a two to three-year lag. Nevertheless, the PPS data have significant advantages. Starting with the federal fiscal 1990, hospitals report their wages annually on their Medicare Cost Reports. (Prior to 1990, HCFA periodically surveyed hospitals; the last such survey collected 1988 data.) The PPS data's geographic coverage is extensive enough to allow wage change computations at the level of the 89 1997 Fee Schedule Areas, although the index has been somewhat unstable in small MSAs (Pope and Adamache, 1993). HCFA edits the data carefully, and wages are on an hourly basis. Moreover, although not precisely occupationally appropriate, the PPS wage data are from the health services industry.

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[3] To facilitate calculations, we used the actual data used in constructing the PPS Area Wage Index rather than the index itself.

Based on this review, two sources appear most promising for updating the work and employee GPCIs between Censuses: the BEA ES-202 data and the PPS hospital wage index. In the next section, we analyze wage change factors computed from these two sources from 1989 (the year of the 1990 Census) to 1993 or 1994. In an earlier report, we compared changes between 1979 and 1989 (i.e., between the 1980 and 1990 Decennial Censuses) in the work GPCI and employee wage index to changes in several of the series reviewed above (Pope and Zuckerman, 1995). The conclusion of that analysis was that, over long periods of time such as a decade, updating with many of these series would improve the accuracy of the Census wage indices on average, but would worsen the accuracy of the indices for some payment areas, substantially in a few cases. Over shorter periods of time (e.g., five years), relative wages change little, and update factors are as likely to introduce random noise as to improve the accuracy of the index. In this earlier report, however, we did not empirically analyze the PPS wage index because it did not exist in 1979, and did not have as extensive ES-202 data by industry as we obtained for this report.

2.2 Empirical Analysis of PPS Wage and BLS ES-202 Update Factors

We obtained PPS Wage data for 1988 and 1990-1993 from HCFA, and ES-202 data for 1979-1994 from the U.S. Bureau of Labor Statistics. No PPS wage data are available for 1989; 1993 was the most recent available PPS data and 1994 was the most recent available ES-202 data. The 1990 Decennial Census data comprising the GPCI wage indices refer to calendar year 1989. Hence, 1989 is the base year for wage update factors. The PPS data were converted from hospital fiscal years to calendar years using methods similar to those employed by HCFA. Then an average of the 1988 and 1990 data was taken to create 1989 wages. Average PPS wages for geographic areas (e.g., states) were created as an average of wages of hospitals located in the area weighted by paid hours reported by each hospital. ES-202 "wages" were defined as total payroll divided by number of workers, and were reported to us by BLS for states, metropolitan areas, and counties.

Update factors between 1989 and other years were computed as the percentage change in wage index values between the two years.[4] For example, hypothetically, suppose that Alabama had a wage index of 0.900 in 1989, indicating that wages in Alabama were 10 percent lower than the national average index of 1.000. If Alabama's index grew to 0.919 in 1993, that indicates its wages were only 8.1 percent below the national average in 1993. Its relative wage change, or update factor, between 1989 and 1993, would be (0.919-0.900)/0.900 = 2.1 percent. Alabama's Census wage index would be multiplied by the factor 1.021 to adjust it for the growth in Alabama's relative wages between 1989 and 1993.[5]

2.2.1 PPS Wage Versus ES-202 Wage Changes

We first compared the PPS wage update factors to the ES-202 factors for general acute care medical/surgical hospitals (SIC 8062) between 1989 and 1993. The results by state are displayed in Table 2-2. The goal of this comparison is to determine whether the two series show the same wage changes, which would give us confidence in the validity of each data source. The correlation coefficient between the two update factors is 0.55, only a moderate positive correlation. The relative wage changes measured by either series are small, on average, but the BLS data shows somewhat larger changes than the PPS data, an average of 2.4 percent versus 1.7 percent. The average difference between the two series by state (2.1 percent) is as large as the change indicated by either series. Hence, the "signal to noise" ratio appears to be low for the two wage series, that is, the difference between the two series is as large, on average, as the measured changes.[6]

Changes for particular states can be substantially different between the two series. For example, Indiana relative wages rose by 1.9 percent according to the PPS data, but fell 5.7 percent according to the ES-202 data. Arizona relative wages fell by 3.8 percent according to the PPS data, but fell 6.6 percent according to the ES-202 data. In general, the PPS wage data are more

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[4] Wage indices were computed by dividing each area's wage by the national average wage (the average of area wages weighted by hours or number of workers).

[5] For the physician work GPCI, the full work GPCI would be multiplied by the factor of 1.021, then the quarter work GPCI would be derived from it using the standard formula.

[6] An alternative interpretation is that one wage series is accurate and the other approximates it with random error.

TABLE 2-2

PERCENT CHANGE IN RELATIVE HOSPITAL WAGES 1989-1993 BY STATE, PPS WAGE DATA VERSUS ES-202 DATA

State	PERCENT CHANGE 1989 - 1993		
	PPS Wage Data	BLS ES-202 Data	Difference between PPS and BLS ES-202
ALABAMA	2.1 %	3.0 %	-0.9 %
ALASKA	-1.0	-3.4	2.4
ARIZONA	-3.8	-6.6	2.8
ARKANSAS	0.0	0.2	-0.2
CALIFORNIA	-0.2	1.0	-1.2
COLORADO	-4.3	-2.4	-1.9
CONNECTICUT	2.6	0.0	2.6
DELAWARE	1.2	-2.8	4.0
DISTRICT OF COLUMBIA	0.4	0.5	-0.1
FLORIDA	-1.0	0.4	-1.4
GEORGIA	-1.2	0.4	-1.6
HAWAII	2.6	7.8	-5.2
IDAHO	-0.5	-3.3	2.8
ILLINOIS	0.7	0.5	0.2
INDIANA	1.9	-5.7	7.6
IOWA	-3.7	-4.1	0.4
KANSAS	-2.9	-4.8	1.9
KENTUCKY	0.3	0.1	0.2
LOUISIANA	2.1	-0.1	2.2
MAINE	1.8	-3.3	5.1
MARYLAND	-1.0	-1.1	0.1
MASSACHUSETTS	2.5	0.0	2.5
MICHIGAN	-1.3	2.9	-4.2
MINNESOTA	0.0	3.4	-3.4
MISSISSIPPI	1.5	-2.5	4.0
MISSOURI	-2.3	-2.4	0.1
MONTANA	-0.5	3.4	-3.9
NEBRASKA	0.7	1.8	-1.1
NEVADA	-1.7	-4.2	2.5
NEW HAMPSHIRE	0.6	-0.8	1.4
NEW JERSEY	3.8	3.8	0.0
NEW MEXICO	-1.7	-4.7	3.1
NEW YORK	1.1	2.7	-1.7
NORTH CAROLINA	1.5	2.6	-1.1
NORTH DAKOTA	-4.1	-0.5	-3.6
OHIO	-0.2	-3.4	3.3
OKLAHOMA	-3.3	-4.0	0.7
OREGON	1.5	1.0	0.5
PENNSYLVANIA	-0.4	-1.4	1.0

TABLE 2-2

PERCENT CHANGE IN RELATIVE HOSPITAL WAGES 1989-1993 BY STATE, PPS WAGE DATA VERSUS ES-202 DATA

State	PERCENT CHANGE 1989 - 1993 PPS Wage Data	BLS ES-202 Data	Difference between PPS and BLS ES-202
RHODE ISLAND	3.7 %	0.3 %	3.4 %
SOUTH CAROLINA	3.6	0.9	2.7
SOUTH DAKOTA	0.1	2.1	-2.0
TENNESSEE	-1.5	-4.1	2.6
TEXAS	1.1	1.7	-0.6
UTAH	-1.1	1.3	-2.4
VIRGINIA	-0.4	-2.9	2.5
WASHINGTON	5.1	8.7	-3.7
WEST VIRGINIA	-3.3	0.4	-3.7
WISCONSIN	1.3	0.4	0.9
WYOMING	-1.0	-0.5	-0.5
Average of Absolute Values	1.7	2.4	2.1

SOURCE: Health Economics Research, Inc.

conservative, showing smaller changes than the ES-202 data. Our conclusion is that random or other differences between these two wage series preclude a feeling of confidence in either for providing update factors for the GPCI. Of the two series, the PPS wage data is preferable because it is more conservative in its measured wage changes, and hence less likely to lead to large errors.

2.2.2 ES-202 Wage Changes by Industry

We also examined ES-202 wage changes by industry, as shown in Table 2-3. The ES-202 data were available through 1994, so these changes are computed from 1989 to 1994. The goal of the industry comparisons is to determine how much wage changes vary across industries, and how reliable the ES-202 data for any particular industry are. If the changes for different industries are highly correlated, then computing update factors from industries similar to physician offices may be less important. Also, a high correlation lends confidence to any particular industry series chosen to provide update factors. The industries we examined, from less to more broadly defined, are:

- offices of physicians;
- hospitals;
- health service industries;
- service industries;
- all industries.

Generally, the more narrowly-defined industries have an occupation mix more relevant to the GPCI, and also are more likely to reflect relevant industry-specific factors. On the other hand, more narrowly-defined industries have smaller sample sizes, and thus greater random error.

The "offices of physicians" industry might seem ideal for purposes of updating the GPCI. Unfortunately, a serious problem with this classification in the ES-202 data is that self-employed physicians are included in the data in varying and unknown proportions in addition to physician and non-physician practice employees (Zuckerman, Welch, and Pope, 1987). In some cases, self-employed physicians are on the payroll of their practices, and are thus included in the ES-202 data, but in other cases they are not. In short, the ES-202 "offices of physicians" series represents an unknown mix of wage changes of physicians and non-physician employees. A related problem is that the division of self-employed physician earnings between "payroll" and "profits" is fairly arbitrary. For these reasons, the "offices of physicians" series is not a reliable measure of

TABLE 2-3

PERCENT CHANGE IN RELATIVE WAGES 1989-1994 BY INDUSTRY, BY STATE, ES-202 DATA

State	Offices of Physicians	Hospitals	Health Service Industry	Service Industries	All Industries
ALABAMA	3.8 %	8.1 %	3.2 %	2.7 %	0.9 %
ALASKA	17.6	-3.1	1.9	-4.2	-8.6
ARIZONA	-11.1	-4.9	-3.4	-4.3	-2.4
ARKANSAS	-0.2	-2.4	0.4	1.1	0.6
CALIFORNIA	-3.5	-0.1	-2.1	-0.4	0.4
COLORADO	8.6	-3.9	2.0	1.7	-0.2
CONNECTICUT	6.1	0.6	-0.1	2.3	3.1
DELAWARE	9.2	1.5	2.1	4.2	0.9
DISTRICT OF COLUMBIA	8.9	1.3	1.2	2.7	2.7
FLORIDA	-10.4	0.2	-4.2	-3.3	-0.1
GEORGIA	-1.2	-6.0	-7.6	-2.3	0.6
HAWAII	-0.8	8.6	3.6	4.7	5.2
IDAHO	0.7	-9.0	0.5	-1.2	1.2
ILLINOIS	1.8	0.1	0.5	0.0	0.7
INDIANA	1.3	-5.8	1.4	0.5	-0.3
IOWA	4.1	-4.2	3.8	4.4	1.1
KANSAS	4.0	-8.3	-2.0	-1.8	-1.6
KENTUCKY	3.7	0.4	2.7	1.5	0.3
LOUISIANA	-6.7	2.1	-1.8	-1.1	-1.6
MAINE	6.3	-3.3	0.3	-0.5	-2.2
MARYLAND	-2.3	0.9	0.5	0.5	0.7
MASSACHUSETTS	11.4	0.0	0.4	2.1	3.0
MICHIGAN	0.2	4.5	3.4	1.5	0.1
MINNESOTA	2.0	4.4	3.7	1.7	0.0
MISSISSIPPI	2.2	-1.0	0.2	-0.4	0.3
MISSOURI	0.3	-2.5	-0.3	0.2	-1.2
MONTANA	3.1	4.6	1.6	0.8	-3.3
NEBRASKA	0.4	0.7	3.9	3.1	2.1
NEVADA	-12.3	-4.9	-9.5	-1.2	1.0

TABLE 2-3

PERCENT CHANGE IN RELATIVE WAGES 1989-1994 BY INDUSTRY, BY STATE, ES-202 DATA

State	Offices of Physicians	Hospitals	Health Service Industry	Service Industries	All Industries
NEW HAMPSHIRE	10.7 %	-1.3 %	1.9 %	0.8 %	-0.6 %
NEW JERSEY	2.2	4.7	1.7	3.1	4.7
NEW MEXICO	-2.7	-5.7	-1.5	-1.2	-0.1
NEW YORK	4.0	5.3	2.7	1.8	2.6
NORTH CAROLINA	6.7	3.2	1.7	1.5	1.9
NORTH DAKOTA	-2.9	2.3	-1.8	-2.8	-1.7
OHIO	-4.0	-1.9	-0.8	-0.6	-0.3
OKLAHOMA	6.3	-3.8	-2.0	-2.3	-4.6
OREGON	3.1	0.9	5.6	2.4	2.3
PENNSYLVANIA	-4.7	-2.6	-1.7	0.4	1.3
RHODE ISLAND	1.9	1.6	0.0	2.0	1.1
SOUTH CAROLINA	13.9	0.7	4.4	2.0	0.7
SOUTH DAKOTA	4.8	1.5	7.9	4.8	2.4
TENNESSEE	2.9	-2.2	-0.6	-0.3	2.3
TEXAS	-2.1	1.1	-0.6	-0.5	0.3
UTAH	7.2	0.5	0.9	1.2	-1.0
VERMONT	15.9	n/a	1.4	3.4	-0.6
VIRGINIA	2.3	-4.3	-2.2	-1.4	-0.7
WASHINGTON	17.1	11.1	11.7	10.5	2.3
WEST VIRGINIA	-2.9	0.0	-2.8	-0.5	-3.1
WISCONSIN	9.6	0.9	5.7	3.1	1.0
WYOMING	3.5	-4.9	1.0	-1.7	-3.2
Average Absolute Change	5.4	3.2	2.5	2.1	1.7

SOURCE: Health Economics Research, Inc.

wage changes of any particular occupational group, but we include it for completeness and comparative purposes.

The correlation matrix of state wage changes for the five industry groupings is shown below.

	Hospitals	Services Industries	Health Service Industries	All Industries
Offices of physicians	0.21	0.63	0.49	-0.04
Hospitals		0.56	0.64	0.39
Health services industries			0.77	0.28
Service industries				0.63

The correlations range from virtually zero (offices of physicians and all industries) to moderately high (service industries and health services industries). Clearly, it makes a difference which industry series is chosen to provide wage update factors, as can be seen by examining the wage update factors across industries for states in Table 2-3.

We also computed the (absolute) average wage changes by state for each industry series. As expected, the average change is smaller as the industry is more broadly defined and sample sizes are larger. The average change is a large 5.4 percent for offices of physicians ranging down to only 1.7 percent for all industries. We attribute this pattern to less random variation in the broader industry wage measures, and more averaging across industry-specific supply and demand factors.

We conclude that none of the ES-202 series provides reliable, accurate, and validated update factors for the GPCI. The more narrowly-defined industry series appear to suffer from excessive random error, while the broader series may not capture factors specific to offices of physicians. The best of the ES-202 series for the purposes of GPCI updates are probably the health services and service industry series. They are fairly highly correlated with the other series, but are conservative in the sense of showing relatively small average wage changes.

2.3 Magnitude of Changes Between Decennial Censuses in the Physician Work and Employee Wage Indices

Given the lack of a suitable wage series to update the GPCI Census wage indices, not updating them needs to be evaluated as an alternative. The purpose of this section is to analyze how inaccurate the Census wage indices become in the ten years between updates with new Decennial Census data. If the changes in the indices over a ten year period are small, updating only once every ten years is an attractive option. On the other hand, if large changes in relative wages occur between Censuses, some means of intra-Censual updating must be found. Fortunately, this question can be studied empirically with changes between the 1980 Census data used in the 1992 GPCI and the 1990 Census data used in the 1996 GPCI. The assumption in these analyses is that changes from 1980 to 1990 indicate the likely magnitude of changes between the 1990 and 2000 Censuses.

Table 2-4 shows percentage changes in the physician work and employee wage indices between the 1980 Census and the 1990 Census. Changes are examined for states and historical payment localities.[7] On average, the full variation state work GPCIs change by about 5 percent, implying an average change of about 1.2 percent in the quarter work GPCIs. Because the quarter work GPCI comprises about half of the overall GAF, updating the work GPCI with new Census data results in an average payment change of about 0.6 percent per state.

The average changes are small. However, for some states, the changes are larger. The maximum change in the full variation state work GPCI is about 14 percent. This corresponds to a 3.6 percent change in the quarter work GPCI, or about a 1.8 percent change in payments (the overall GAF). For individual Medicare payment localities, the changes from updating are slightly larger. The largest full work GPCI changes are 16 to 20 percent, or a 4 to 5 percent change in the quarter work GPCI, or about a 2.4 percent increase or decrease in payments.

The changes in the employee wage index with new Census data are similar to those in the full work GPCI, but slightly larger. The average change across states is 6 percent. The largest changes for any state or payment locality are about 20 percent. The employee wage index accounts for about 40 percent of the practice expense GPCI, which in turn comprises about 40 percent of the overall GAF. Thus, the employee wage index comprises about 16 percent of the

[7] Changes for the historical payment localities may be taken to proxy changes for the 1997 Fee Schedule Areas. But the historical changes likely overstate the extremes of changes among the FSAs because there are many fewer FSAs than historical localities, and the FSAs are more aggregated than the historical localities, damping random variation.

TABLE 2-4

CHANGE IN THE PHYSICIAN WORK GPCI AND EMPLOYEE WAGE INDEX BETWEEN THE 1980 AND 1990 CENSUSES

	PHYSICIAN WORK GPCI			EMPLOYEE WAGE INDEX			COMBINED WORK AND EMPLOYEE
	Full Work GPCI	Quarter Work GPCI	Overall GAF[a]	Employee Wage Index	Practice Expense GPCI	Overall GAF[a]	Overall GAF[a]
State Average	5 %	1.2 %	0.6 %	6 %	2.4 %	1 %	1.6 %
Max State	14	3.6	1.8	22	9	3-4	5-6
Max Locality	16-20	4-5	2.4	23	9	3-4	5-6

[a]Change in overall payment, assuming no change in other components of the GAF.

SOURCE: Health Economics Research, Inc.

entire GAF. A 6 percent average change per state translates into about a 2.4 percent change in the practice expense GPCI, and a 1 percent average change in MFS payments due to updating the employee wage index. The maximum change in the practice expense GPCI resulting from updating the employee wage index with new Census data is about 9 percent, and the maximum payment change is 3.2 percent.

The physician work and employee indices are both earnings-based indices. They differ in the mix of occupations included: professionals for the work GPCI and employees of physician offices for the employee wage index. Changes in the earnings of occupations in an area are highly correlated because they are affected by similar factors such as the strength of the local economy. Hence, areas that receive higher MFS payments due to an update in the physician work GPCI will also tend to receive higher payments due to a revised employee wage index. What is the combined effect on payments of updating both earnings-based indices?

The average change across states in MFS payments from updating the work and employee indices with 1990 Census data is 0.6 percent and 1 percent, respectively. So the combined average change would be about 1.6 percent, assuming a perfect correlation between the two indices. Similarly, the largest combined change in payments for particular states or localities would be about 5 to 6 percent.

These changes from updating with Decennial Census data every 10 years seem modest. Moreover, if a two year transition period is employed, as specified by Congress, the largest annual change for any state or Fee Schedule Area would be only 2 to 3 percent. These changes would seem to be within the "acceptable" range, that is, not so large as to be inexplicable or disruptive to physicians being paid under the MFS. Of course, the entire analysis has assumed that the changes from updating 1980 Census earnings with 1990 Census earnings are representative of the changes that would occur in future updates at ten-year intervals. If relative wages by area change more rapidly in the future, the changes in the GAF could be larger. Also, the overall change in the GAF, and in MFS payments, could be amplified by changes in the other geographic indices, for office rent and malpractice insurance. The office rental index, in particular, is likely to be correlated with the earnings indices because rents as well as wages are affected by general economic conditions. However, the rental index can easily be updated more frequently than every 10 years (see Chapter 3), lessening the payment changes resulting from the 10 year "benchmark" updates based on the Decennial Censuses.

In sum, we believe that it would be acceptable to update the Census wage-based indices only once every 10 years, when data from a new Decennial Census becomes available. The changes in the physician work GPCI and the employee wage index between Censuses are not so large that updating between Censuses is essential.

2.4 Conclusions and Recommendations on Updating Census Wage Indices

Our recommendation is not to update the physician work GPCI and the employee wage index for the 1999 GPCIs. Both indices would continue to be based on data from the 1990 Census, and would be identical to the 1997 indices, with the exception of reweighting with 1994 instead of 1992 relative value unit weights (see Section 2.5) and budget neutrality adjustments. As argued in Section 2.3, the evidence suggests that relative wages change slowly and that not updating between Decennial Censuses is an acceptable strategy.

Our review of sources for updating wages between Decennial Censuses identified two leading candidates: the BLS ES-202 data and the PPS hospital wage index. We analyzed and computed update factors from the BLS ES-202 and PPS hospital wage index data. The ES-202 earnings data are derived from unemployment insurance records reported to state agencies, and consist of total payroll divided by counts of workers. The ES-202 data are currently available through 1994, and can be disaggregated by industry, but not occupation. The PPS wage data are collected by HCFA from hospitals and consist of average hourly earnings of each hospital's employees. The PPS wage data are currently available through 1993, and are not available by occupation. The two wage series produced significantly different update factors for many states over the period 1989 to 1993 even when the ES-202 data was restricted to hospitals.

We also examined ES-202 changes from 1989 to 1994 by industry. The update factor for a state is often significantly different depending on the industry chosen. If one industry were clearly best, industry differences would be unimportant, but given the different occupations included in the GPCI wage indices, they are relevant. For example, the overwhelming majority of nurses are health service industry workers, but administrative support occupations and professional occupations are employed in many industries.

In a previous report on updating the GPCI (Pope and Zuckerman, 1995), we compared ES-202 changes from 1979 to 1989 to actual changes in earnings from the 1980 and 1990 Censuses. We concluded that updating with the ES-202 factors improved the accuracy of the GPCI on

average, but updates for particular states could be substantially inaccurate and inappropriate. Updating will improve the average accuracy of the GPCI, but at the cost of introducing random and other error into the GPCI, such that it will become less accurate for particular areas.

ES-202 and PPS wage updates also suffer from conceptual and data limitations. Neither is occupation specific and so neither can isolate the specific occupations included in the GPCI. The PPS data are limited to only one industry, hospitals, which may exhibit different wage changes from those in physician offices or the occupations represented in the GPCI. The ES-202 data are not corrected for hours worked or even part-time versus full-time. They also suffer from a technical discontinuity in the early 1990s because BLS discovered payroll services were not reporting the number of workers properly. Neither the ES-202 nor the PPS data are corrected for occupation mix changes over time. The PPS data are available only with a long time lag, and "updates" based on the PPS data may already be out of date.

Our judgment is that the PPS hospital wage data provide the best available source for updating the GPCI wage indices. However, another option, which is our recommended option, is not to update the Census wage indices. We are concerned that we are unable to validate the PPS data against the 1979 to 1989 change in the Census wage indices (because the PPS index is not available for 1979). The lack of occupational and industry match between the PPS data and the occupations included in the GPCI indices also concerns us. In all likelihood, using the PPS data to update would improve the accuracy of the GPCI on average, but would make it less accurate, perhaps substantially so, for several Fee Schedule Areas. When the GPCI is updated with new Decennial Census data after the millennium, very large changes might occur for some Fee Schedule Areas. We think it is prudent to wait until the PPS data can be validated against the change in the Census indices from 1989 to 1999 before it is used as an update factor.

We believe that not updating the wage indices leaves an acceptably accurate GPCI. State PPS wage update factors are all 5.1 percent or less in absolute value. With the quarter work adjustment and work comprising 54.2 percent of the GPCI, a 5 percent change in an area's full work GPCI implies a 0.68 percent change in the GAF (= 5%*0.25*0.542). Since the non-physician employee wage index comprises 16.2 percent of the GPCI, a 5 percent change implies a 0.81 percent change in the GAF (= 5%*0.162). Adding these together implies a change of about 1.5 percent. This is the maximum change any area would experience. The vast majority of areas would see a change of 1 percent or less from updating the Census wage indices. We do not believe it is desirable to introduce random noise into the GPCI for this magnitude of update.

Rather, it is better to wait and update the Census wage indices every 10 years with data from the Decennial Census. The largest payment (GAF) changes from updating the GPCI wage indices based on 1980 Census data with 1990 Census data were only 5 to 6 percent spread over the two-year transition period. Hence, updating every 10 years does not result in unacceptably large or disruptive payment changes.

We have three suggestions for future research on updating the Census wage indices between Decennial Censuses. One we have already mentioned, which is to validate changes in the PPS wage data from 1989 to 1999 against changes between the 1990 and 2000 Decennial Censuses. If the changes are highly correlated and not too dissimilar for any Fee Schedule Area, use of the PPS wage data to update the GPCI may be appropriate in the future. Second, we believe that the U.S. Bureau of Labor Statistics' Occupational Compensation Survey (OCS) warrants further consideration for providing future update factors. The OCS has only existed in its present form since 1992 and hence was not of great relevance for the current GPCI update. The OCS annually surveys wages for professional and clerical occupations, among others, for about 150 areas, mostly large metropolitan areas. Two issues would need to be addressed for the OCS to provide future GPCI update factors: (I) wages would need to be collected or imputed for medical occupations such as nurses; and (ii) wages would need to be collected or imputed for non-surveyed areas, such as non-metropolitan and less populous metropolitan areas, and states and outlying areas (e.g., Puerto Rico) that are not currently surveyed. Third, if physician income could be separated from non-physician income, a reliable count of employees or (ideally) hours worked could be obtained, and more detailed data from sole proprietorships could be obtained, the IRS business tax return data could be explored as a source for updates.

2.5 1999 Versus 1997 Work GPCI and Employee Wage Index

Although we recommend no update to the 1990 Census earnings data underlying the work GPCI and employee wage index, we do recommend reweighting the two Census wage indices with 1994 relative value unit (RVU) weights. Doing so will keep these indices consistent with the rest of the 1999 GPCI. The 1994 relative value unit weights, the most recent available, replace the 1992 weights used in the 1997 GPCI. County RVU weights are used in two ways in the GPCI. First, Fee Schedule Area (FSA) input prices are averages of county input prices

weighted by county RVUs. Second, the national average input prices used to normalize the indices are weighted by county RVUs. County work RVUs weight the work GPCI, and county practice expense RVUs weight the employee wage index.

Table 2-5 shows differences between the 1997 and the 1999 quarter work GPCI by FSA. As expected, the differences are very small. The only area where the index changes by more than 0.001 (0.1%) is "Rest of Maryland", which occurs because of corrections a Medicare carrier made in allocation of RVUs between Maryland and the St. Louis, Missouri area. Table 2-6 shows differences between the 1997 and 1999 employee wage index. Again, the changes are small, and are largest for Maryland and Missouri FSAs.

TABLE 2-5

1999 VERSUS 1997 QUARTER WORK GEOGRAPHIC PRACTICE COST INDEX (GPCI) BY 1997 FEE SCHEDULE AREA (IN DESCENDING ORDER OF DIFFERENCE)

Carrier Number	Locality Number	Fee Schedule Area	QUARTER WORK GPCI 1999	QUARTER WORK GPCI 1997	Difference	Percentage Difference
00901	99	REST OF MARYLAND	0.985	0.982	0.003	0.3 %
00621	12	EAST ST. LOUIS, IL	0.988	0.987	0.001	0.1
00528	99	REST OF LOUISIANA	0.969	0.968	0.001	0.1
10250	00	MISSISSIPPI	0.957	0.956	0.001	0.1
00780	40	NEW HAMPSHIRE	0.988	0.987	0.001	0.1
00900	99	REST OF TEXAS	0.966	0.965	0.001	0.1
01020	01	ALASKA	1.063	1.063	0.000	0.0
00520	13	ARKANSAS	0.953	0.953	0.000	0.0
01030	00	ARIZONA	0.995	0.995	0.000	0.0
00542	03	MARIN/NAPA/SOLANO, CA	1.014	1.014	0.000	0.0
00542	05	SAN FRANCISCO, CA	1.067	1.067	0.000	0.0
02050	17	VENTURA, CA	1.027	1.027	0.000	0.0
02050	18	LOS ANGELES	1.055	1.055	0.000	0.0
02050	26	ANAHEIM/SANTA ANA, CA	1.036	1.036	0.000	0.0
10230	00	CONNECTICUT	1.049	1.049	0.000	0.0
00580	01	DC +MD/VA SUBURBS	1.050	1.050	0.000	0.0
00590	04	MIAMI, FL	1.015	1.015	0.000	0.0
00590	99	REST OF FLORIDA	0.975	0.975	0.000	0.0
01040	01	ATLANTA, GA	1.006	1.006	0.000	0.0
01120	01	HAWAII/GUAM	0.998	0.998	0.000	0.0
00640	00	IOWA	0.958	0.958	0.000	0.0
05130	00	IDAHO	0.960	0.960	0.000	0.0
00621	15	SUBURBAN CHICAGO, IL	1.006	1.006	0.000	0.0
00621	16	CHICAGO, IL	1.027	1.027	0.000	0.0
00621	99	REST OF ILLINOIS	0.963	0.963	0.000	0.0
00630	00	INDIANA	0.981	0.981	0.000	0.0
00650	00	KANSAS*	0.963	0.963	0.000	0.0
00740	04	KANSAS*				
00660	00	KENTUCKY	0.970	0.970	0.000	0.0
00528	01	NEW ORLEANS, LA	0.998	0.998	0.000	0.0
00700	01	METROPOLITAN BOSTON	1.039	1.039	0.000	0.0
21200	03	SOUTHERN MAINE	0.979	0.979	0.000	0.0
21200	99	REST OF MAINE	0.961	0.961	0.000	0.0
00623	01	DETROIT, MI	1.042	1.042	0.000	0.0
10240	00	MINNESOTA	0.989	0.989	0.000	0.0
00740	02	METROPOLITAN KANSAS CITY, MO	0.988	0.988	0.000	0.0
11260	01	METROPOLITAN ST. LOUIS, MO	0.994	0.994	0.000	0.0
00751	01	MONTANA	0.951	0.951	0.000	0.0
05535	00	NORTH CAROLINA	0.970	0.970	0.000	0.0
00820	01	NORTH DAKOTA	0.950	0.950	0.000	0.0
00860	99	REST OF NEW JERSEY	1.028	1.028	0.000	0.0
00803	02	NYC SUBURBS/LONG I., NY	1.067	1.067	0.000	0.0
00803	03	POUGHKPSIE/N NYC SUBURBS, NY	1.010	1.010	0.000	0.0
14330	04	QUEENS, NY	1.057	1.057	0.000	0.0
16360	00	OHIO	0.990	0.990	0.000	0.0
01370	00	OKLAHOMA	0.969	0.969	0.000	0.0
01380	01	PORTLAND, OR	0.996	0.996	0.000	0.0
01380	99	REST OF OREGON	0.961	0.961	0.000	0.0
00865	01	METROPOLITAN PHILADELPHIA, PA	1.024	1.024	0.000	0.0
00865	99	REST OF PENNSYLVANIA	0.989	0.989	0.000	0.0

TABLE 2-5

1999 VERSUS 1997 QUARTER WORK GEOGRAPHIC PRACTICE COST INDEX (GPCI) BY 1997 FEE SCHEDULE AREA (IN DESCENDING ORDER OF DIFFERENCE)

Carrier Number	Locality Number	Fee Schedule Area	QUARTER WORK GPCI 1999	QUARTER WORK GPCI 1997	Difference	Percentage Difference
00973	20	PUERTO RICO	0.882	0.882	0.000	0.0 %
00870	01	RHODE ISLAND	1.018	1.018	0.000	0.0
00880	01	SOUTH CAROLINA	0.975	0.975	0.000	0.0
00820	02	SOUTH DAKOTA	0.935	0.935	0.000	0.0
05440	35	TENNESSEE	0.975	0.975	0.000	0.0
00900	09	BRAZORIA, TX	0.992	0.992	0.000	0.0
00900	15	GALVESTON, TX	0.988	0.988	0.000	0.0
00900	18	HOUSTON, TX	1.020	1.020	0.000	0.0
00900	20	BEAUMONT, TX	0.992	0.992	0.000	0.0
00900	31	AUSTIN, TX	0.986	0.986	0.000	0.0
00910	09	UTAH	0.977	0.977	0.000	0.0
10490	00	VIRGINIA	0.985	0.985	0.000	0.0
00973	50	VIRGIN ISLANDS	0.965	0.965	0.000	0.0
00780	50	VERMONT	0.973	0.973	0.000	0.0
01390	02	SEATTLE (KING CNTY), WA	1.005	1.005	0.000	0.0
01390	99	REST OF WASHINGTON	0.982	0.982	0.000	0.0
00951	00	WISCONSIN	0.981	0.981	0.000	0.0
16510	16	WEST VIRGINIA	0.963	0.963	0.000	0.0
00825	21	WYOMING	0.967	0.967	0.000	0.0
00542	07	OAKLAND/BERKLEY, CA	1.040	1.041	-0.001	-0.1
00542	09	SANTA CLARA, CA	1.062	1.063	-0.001	-0.1
02050	99	REST OF CALIFORNIA*	1.008	1.009	-0.001	-0.1
00542	99					
00700	99	REST OF MASSACHUSETTS	1.010	1.011	-0.001	-0.1
00900	11	DALLAS, TX	1.010	1.011	-0.001	-0.1
00510	00	ALABAMA	0.978	0.979	-0.001	-0.1
00824	01	COLORADO	0.987	0.988	-0.001	-0.1
00900	28	FORT LAUDERDALE, FL	0.996	0.997	-0.001	-0.1
01040	99	REST OF GEORGIA	0.970	0.971	-0.001	-0.1
00623	99	REST OF MICHIGAN	0.996	0.997	-0.001	-0.1
00740	99	REST OF MISSOURI*	0.945	0.946	-0.001	-0.1
11260	99					
00655	00	NEBRASKA	0.949	0.950	-0.001	-0.1
01360	05	NEW MEXICO	0.973	0.974	-0.001	-0.1
00801	99	REST OF NEW YORK	0.999	1.000	-0.001	-0.1
00590	03	FORT WORTH, TX	0.987	0.988	-0.001	-0.1
00542	06	SAN MATEO, CA	1.047	1.048	-0.001	-0.1
00570	01	DELAWARE	1.019	1.020	-0.001	-0.1
00901	01	BALTIMORE/SURR. CNTYS, MD	1.019	1.020	-0.001	-0.1
00860	01	NORTHERN NJ	1.057	1.058	-0.001	-0.1
01290	00	NEVADA	1.005	1.006	-0.001	-0.1
00803	01	MANHATTAN, NY	1.093	1.094	-0.001	-0.1

* Payment locality is serviced by two carriers

NOTE: Not adjusted for budget neutrality

SOURCE: Health Economics Research, Inc

TABLE 2-6

1999 VERSUS 1997 EMPLOYEE WAGE INDEX BY 1997 FEE SCHEDULE AREA
(IN DESCENDING ORDER OF DIFFERENCE)

Carrier Number	Locality Number	Fee Schedule Area	EMPLOYEE WAGE INDEX 1999	1997	Difference	Percentage Difference
00901	99	REST OF MARYLAND	0.948	0.928	0.020	2.2 %
00820	01	NORTH DAKOTA	0.842	0.838	0.004	0.5
00621	12	EAST ST. LOUIS, IL	0.957	0.954	0.003	0.3
00650	00	KANSAS*	0.886	0.883	0.003	0.3
00740	04					
00803	03	POUGHKPSIE/N NYC SUBURBS, NY	1.015	1.012	0.003	0.3
00542	03	MARIN/NAPA/SOLANO, CA	1.184	1.182	0.002	0.2
00640	00	IOWA	0.842	0.840	0.002	0.2
00780	40	NEW HAMPSHIRE	1.022	1.020	0.002	0.2
00510	00	ALABAMA	0.860	0.858	0.002	0.2
00621	99	REST OF ILLINOIS	0.865	0.863	0.002	0.2
10250	00	MISSISSIPPI	0.809	0.807	0.002	0.2
00900	99	REST OF TEXAS	0.847	0.845	0.002	0.2
00590	04	MIAMI, FL	1.044	1.043	0.001	0.1
00621	15	SUBURBAN CHICAGO, IL	1.034	1.033	0.001	0.1
00700	01	METROPOLITAN BOSTON	1.258	1.257	0.001	0.1
00900	18	HOUSTON, TX	1.034	1.033	0.001	0.1
02050	17	VENTURA, CA	1.120	1.119	0.001	0.1
02050	26	ANAHEIM/SANTA ANA, CA	1.179	1.178	0.001	0.1
00860	99	REST OF NEW JERSEY	1.070	1.069	0.001	0.1
01290	00	NEVADA	1.028	1.027	0.001	0.1
10240	00	MINNESOTA	0.980	0.979	0.001	0.1
00825	21	WYOMING	0.880	0.879	0.001	0.1
01370	00	OKLAHOMA	0.882	0.881	0.001	0.1
01030	00	ARIZONA	0.955	0.954	0.001	0.1
00630	00	INDIANA	0.912	0.911	0.001	0.1
00528	99	REST OF LOUISIANA	0.875	0.874	0.001	0.1
00623	99	REST OF MICHIGAN	0.953	0.952	0.001	0.1
00865	99	REST OF PENNSYLVANIA	0.934	0.933	0.001	0.1
01390	99	REST OF WASHINGTON	0.966	0.965	0.001	0.1
00951	00	WISCONSIN	0.921	0.920	0.001	0.1
16510	16	WEST VIRGINIA	0.845	0.844	0.001	0.1
01380	01	PORTLAND, OR	1.047	1.046	0.001	0.1
10230	00	CONNECTICUT	1.250	1.249	0.001	0.1
00528	01	NEW ORLEANS, LA	0.980	0.980	0.000	0.0
00542	05	SAN FRANCISCO, CA	1.353	1.353	0.000	0.0
00542	06	SAN MATEO, CA	1.289	1.289	0.000	0.0
00542	07	OAKLAND/BERKLEY, CA	1.275	1.275	0.000	0.0
00542	09	SANTA CLARA, CA	1.310	1.310	0.000	0.0
00570	01	DELAWARE	1.061	1.061	0.000	0.0
00580	01	DC + MD/VA SUBURBS	1.190	1.190	0.000	0.0
00621	16	CHICAGO, IL	1.087	1.087	0.000	0.0
00740	02	METROPOLITAN KANSAS CITY, MO	0.979	0.979	0.000	0.0
11260	01	METROPOLITAN ST. LOUIS, MO	0.976	0.976	0.000	0.0
00751	01	MONTANA	0.838	0.838	0.000	0.0
00780	50	VERMONT	0.969	0.969	0.000	0.0
00803	01	MANHATTAN, NY	1.375	1.375	0.000	0.0
00803	02	NYC SUBURBS/LONG I., NY	1.246	1.246	0.000	0.0
00820	02	SOUTH DAKOTA	0.800	0.800	0.000	0.0
00860	01	NORTHERN NJ	1.217	1.217	0.000	0.0
00870	01	RHODE ISLAND	1.100	1.100	0.000	0.0
00880	01	SOUTH CAROLINA	0.887	0.887	0.000	0.0
00900	09	BRAZORIA, TX	0.939	0.939	0.000	0.0
00900	11	DALLAS, TX	1.034	1.034	0.000	0.0
00900	15	GALVESTON, TX	0.978	0.978	0.000	0.0

TABLE 2-6

1999 VERSUS 1997 EMPLOYEE WAGE INDEX BY 1997 FEE SCHEDULE AREA
(IN DESCENDING ORDER OF DIFFERENCE)

Carrier Number	Locality Number	Fee Schedule Area	EMPLOYEE WAGE INDEX 1999	1997	Difference	Percentage Difference
00900	20	BEAUMONT, TX	0.895	0.895	0.000	0.0 %
00590	03	FORT WORTH, TX	0.976	0.976	0.000	0.0
00900	31	AUSTIN, TX	0.923	0.923	0.000	0.0
00973	20	PUERTO RICO	0.498	0.498	0.000	0.0
00973	50	VIRGIN ISLANDS	0.887	0.887	0.000	0.0
01040	01	ATLANTA, GA	1.061	1.061	0.000	0.0
01120	01	HAWAII/GUAM	1.054	1.054	0.000	0.0
01390	02	SEATTLE (KING CNTY), WA	1.097	1.097	0.000	0.0
02050	18	LOS ANGELES, CA	1.203	1.203	0.000	0.0
14330	04	QUEENS, NY	1.292	1.292	0.000	0.0
00590	99	REST OF FLORIDA	0.906	0.906	0.000	0.0
01040	99	REST OF GEORGIA	0.893	0.893	0.000	0.0
05130	00	IDAHO	0.852	0.852	0.000	0.0
00660	00	KENTUCKY	0.862	0.862	0.000	0.0
00700	99	REST OF MASSACHUSETTS	1.125	1.125	0.000	0.0
21200	99	REST OF MAINE	0.915	0.915	0.000	0.0
10490	00	VIRGINIA	0.924	0.924	0.000	0.0
00623	01	DETROIT, MI	1.072	1.073	-0.001	-0.1
00865	01	METROPOLITAN PHILADELPHIA, PA	1.118	1.119	-0.001	-0.1
01020	01	ALASKA	1.266	1.267	-0.001	-0.1
00520	13	ARKANSAS	0.825	0.826	-0.001	-0.1
00655	00	NEBRASKA	0.826	0.827	-0.001	-0.1
05440	35	TENNESSEE	0.895	0.896	-0.001	-0.1
05535	00	NORTH CAROLINA	0.922	0.923	-0.001	-0.1
16360	00	OHIO	0.963	0.964	-0.001	-0.1
21200	03	SOUTHERN MAINE	0.997	0.998	-0.001	-0.1
00801	99	REST OF NEW YORK	0.951	0.952	-0.001	-0.1
02050	99	REST OF CALIFORNIA*	1.061	1.062	-0.001	-0.1
00542	99					
00910	09	UTAH	0.877	0.879	-0.002	-0.2
00900	28	FORT LAUDERDALE, FL	0.991	0.994	-0.003	-0.3
01360	05	NEW MEXICO	0.871	0.874	-0.003	-0.3
01380	99	REST OF OREGON	0.906	0.909	-0.003	-0.3
00824	01	COLORADO	0.951	0.955	-0.004	-0.4
00901	01	BALTIMORE/SURR. CNTYS, MD	1.078	1.087	-0.009	-0.8
00740	99	REST OF MISSOURI*	0.789	0.798	-0.009	-1.1
11260	99					

* Payment locality is serviced by two carriers.

NOTE: Not adjusted for budget neutrality.

SOURCE: Health Economics Research, Inc.

3.0 OFFICE RENTAL INDEX

The office rental index is a component of the practice expense GPCI (see Section 1.1). It measures geographic variation in physicians' relative cost of renting office space. Because no suitable national data on relative office rental costs are available, the rental index is based on the "fair market" two-bedroom apartment rents (FMRs) published by the U.S. Department of Housing and Urban Development (HUD) for use in the Section 8 rental subsidy program. The assumption is that relative residential rents are an accurate indicator of relative office rents. According to theory and empirical evidence, this assumption is a reasonable one (see Pope *et al.*, 1994). HUD publishes the FMRs annually for metropolitan areas and non-metropolitan counties. The FMRs are benchmarked every ten years with Decennial Census data, and are updated between Censuses with Census and HUD rental surveys.

We first discuss in Section 3.1 the updated FMR data used for the 1999 office rental index, and the effect the new data has on index values by Fee Schedule Area (FSA). In Section 3.2, we describe a methodological change in computing the rental index, and show the effect this has on index values by area. Section 3.3 compares the final 1999 office rental index--comprising both the updated FMR data and the methodological change--to the 1997 office rental index.

3.1 Fiscal Year 1996 Fair Market Rents

The most recent FMRs available for the 1999 GPCI are the final fiscal year (FY) 1996 rents. HUD has made two small methodological changes in the FMRs. First, HUD is using the 40th percentile of area rents rather than the 45th. This does not materially affect the GPCI, which contains an index of relative rents only. Second, HUD has established an FMR floor for rural counties at the statewide rural county average. This same floor also applies to Metropolitan Statistical Areas (MSAs). HUD's new policy has the effect of raising the GPCI office rental index slightly in rural areas. This seems appropriate and acceptable.

Table 3-1 compares the rental index based on the FY 1996 FMRs (labeled the "1999 rental index") to the rental index used in the 1997 GPCI based on FY 1994 FMRs (labeled the "1997 rental index"). The methodology used to compute the two indices is identical--only the year of the data differs. Only two FSAs experience changes of more than 10 percent in their indices. The Virgin Islands gains 20 percent, and Ventura, California loses 16 percent. Since the office rental index

TABLE 3-1

1999 RENTAL INDEX (1997 METHODOLOGY) VERSUS 1997 RENTAL INDEX BY 1997 FEE SCHEDULE AREA
(IN DESCENDING ORDER OF DIFFERENCE)

Carrier Number	Locality Number	Fee Schedule Area	RENTAL INDEX 1999	RENTAL INDEX 1997	Difference	Percent Difference
00973	50	VIRGIN ISLANDS	1.308	1.089	0.219	20.1 %
01380	01	PORTLAND, OR	1.012	0.923	0.089	9.6
00824	01	COLORADO	0.946	0.871	0.075	8.6
01020	01	ALASKA	1.264	1.190	0.074	6.2
00910	09	UTAH	0.827	0.753	0.074	9.8
00820	02	SOUTH DAKOTA	0.809	0.740	0.069	9.3
00820	01	NORTH DAKOTA	0.760	0.695	0.065	9.4
01030	00	ARIZONA	0.954	0.892	0.062	7.0
00900	31	AUSTIN, TX	1.117	1.061	0.056	5.3
01390	99	REST OF WASHINGTON	0.952	0.896	0.056	6.3
00825	21	WYOMING	0.768	0.714	0.054	7.6
00751	01	MONTANA	0.765	0.713	0.052	7.3
00900	09	BRAZORIA, TX	1.001	0.957	0.044	4.6
00901	99	REST OF MARYLAND	0.957	0.916	0.041	4.5
05130	00	IDAHO	0.801	0.761	0.040	5.3
00528	99	REST OF LOUISIANA	0.721	0.682	0.039	5.7
01380	99	REST OF OREGON	0.898	0.860	0.038	4.4
01390	02	SEATTLE (KING CNTY), WA	1.181	1.149	0.032	2.8
01360	05	NEW MEXICO	0.843	0.811	0.032	3.9
01040	99	REST OF GEORGIA	0.764	0.734	0.030	4.1
00660	00	KENTUCKY	0.719	0.690	0.029	4.2
00900	99	REST OF TEXAS	0.788	0.762	0.026	3.4
10250	00	MISSISSIPPI	0.704	0.678	0.026	3.8
05535	00	NORTH CAROLINA	0.817	0.791	0.026	3.3
00865	99	REST OF PENNSYLVANIA	0.825	0.801	0.024	3.0
00801	99	REST OF NEW YORK	0.914	0.892	0.022	2.5
00650	00	KANSAS*	0.772	0.751	0.021	2.8
00740	04					
00640	00	IOWA	0.778	0.758	0.020	2.6
00880	01	SOUTH CAROLINA	0.794	0.774	0.020	2.6
00900	20	BEAUMONT, TX	0.757	0.737	0.020	2.7
00901	01	BALTIMORE/SURR. CNTYS, MD	1.022	1.003	0.019	1.9
00900	11	DALLAS, TX	1.008	0.990	0.018	1.8
00951	00	WISCONSIN	0.848	0.830	0.018	2.2
00590	03	FORT WORTH, TX	0.941	0.924	0.017	1.8
01040	01	ATLANTA, GA	1.033	1.017	0.016	1.6
00900	15	GALVESTON, TX	0.910	0.896	0.014	1.6
00900	18	HOUSTON, TX	0.978	0.964	0.014	1.5
00528	01	NEW ORLEANS, LA	0.826	0.812	0.014	1.7
00590	99	REST OF FLORIDA	0.935	0.922	0.013	1.4
01290	00	NEVADA	1.079	1.066	0.013	1.2
00803	03	POUGHKPSIE/N NYC SUBURBS, NY	1.311	1.298	0.013	1.0
16510	16	WEST VIRGINIA	0.658	0.646	0.012	1.9
00621	99	REST OF ILLINOIS	0.756	0.745	0.011	1.5
00510	00	ALABAMA	0.713	0.703	0.010	1.4
00520	13	ARKANSAS	0.698	0.688	0.010	1.5
00655	00	NEBRASKA	0.770	0.760	0.010	1.3
10240	00	MINNESOTA	0.896	0.888	0.008	0.9
10490	00	VIRGINIA	0.877	0.869	0.008	0.9
00623	99	REST OF MICHIGAN	0.819	0.813	0.006	0.7
00621	12	EAST ST. LOUIS, IL	0.787	0.784	0.003	0.4
00740	02	METROPOLITAN KANSAS CITY, MO	0.828	0.827	0.001	0.1
05440	35	TENNESSEE	0.758	0.757	0.001	0.1

TABLE 3-1

1999 RENTAL INDEX (1997 METHODOLOGY) VERSUS 1997 RENTAL INDEX BY 1997 FEE SCHEDULE AREA
(IN DESCENDING ORDER OF DIFFERENCE)

Carrier Number	Locality Number	Fee Schedule Area	RENTAL INDEX 1999	RENTAL INDEX 1997	Difference	Percent Difference
00740	99	REST OF MISSOURI*	0.656	0.656	0.000	0.0 %
11260	99					
00803	02	NYC SUBURBS/LONG I., NY	1.537	1.537	0.000	0.0
00621	15	SUBURBAN CHICAGO, IL	1.312	1.313	-0.001	-0.1
00630	00	INDIANA	0.804	0.805	-0.001	-0.1
16360	00	OHIO	0.811	0.812	-0.001	-0.1
11260	01	METROPOLITAN ST. LOUIS, MO	0.807	0.810	-0.003	-0.4
01370	00	OKLAHOMA	0.713	0.716	-0.003	-0.4
00621	16	CHICAGO, IL	1.172	1.175	-0.003	-0.3
21200	99	REST OF MAINE	0.826	0.830	-0.004	-0.5
00570	01	DELAWARE	1.023	1.028	-0.005	-0.5
00623	01	DETROIT, MI	1.022	1.032	-0.010	-1.0
00780	40	NEW HAMPSHIRE	1.090	1.101	-0.011	-1.0
00700	01	METROPOLITAN BOSTON	1.419	1.433	-0.014	-1.0
21200	03	SOUTHERN MAINE	1.118	1.134	-0.016	-1.4
00780	50	VERMONT	0.980	0.996	-0.016	-1.6
14330	04	QUEENS, NY	1.465	1.484	-0.019	-1.3
00803	01	MANHATTAN, NY	1.807	1.829	-0.022	-1.2
00870	01	RHODE ISLAND	1.110	1.133	-0.023	-2.0
02050	99	REST OF CALIFORNIA*	1.069	1.092	-0.023	-2.1
00542	99					
00700	99	REST OF MASSACHUSETTS	1.114	1.138	-0.024	-2.1
00865	01	METROPOLITAN PHILADELPHIA, PA	1.141	1.168	-0.027	-2.3
02050	18	LOS ANGELES	1.465	1.495	-0.030	-2.0
00973	20	PUERTO RICO	0.715	0.751	-0.036	-4.8
00900	28	FORT LAUDERDALE, FL	1.113	1.151	-0.038	-3.3
00590	04	MIAMI, FL	1.231	1.276	-0.045	-3.5
02050	26	ANAHEIM/SANTA ANA, CA	1.473	1.526	-0.053	-3.5
10230	00	CONNECTICUT	1.312	1.367	-0.055	-4.0
00542	03	MARIN/NAPA/SOLANO, CA	1.361	1.423	-0.062	-4.4
00542	07	OAKLAND/BERKLEY, CA	1.339	1.411	-0.072	-5.1
00860	99	REST OF NEW JERSEY	1.268	1.343	-0.075	-5.6
00860	01	NORTHERN NJ	1.412	1.507	-0.095	-6.3
00542	09	SANTA CLARA, CA	1.547	1.651	-0.104	-6.3
00542	06	SAN MATEO, CA	1.621	1.730	-0.109	-6.3
00542	05	SAN FRANCISCO, CA	1.638	1.748	-0.110	-6.3
00580	01	DC +MD/VA SUBURBS	1.335	1.458	-0.123	-8.4
01120	01	HAWAII	1.638	1.785	-0.147	-8.2
02050	17	VENTURA, CA	1.328	1.573	-0.245	-15.6

* Payment locality is serviced by two carriers.

NOTE: Not adjusted for budget neutrality.

SOURCE: Health Economics Research, Inc.

comprises about 10 percent of the total Geographic Adjustment Factor (GAF), these changes imply a payment increase of about 2 percent for the Virgin Islands, and a reduction of about 1.6 percent for Ventura, California. For all other FSAs, overall payment changes from updating the FMR data are less than 1 percent.

3.2 Restriction of County-Specific Rental Adjustment to New York City

Health Economics Research, Inc. (HER) made one change in the methodology for computing the 1999 office rental index. HUD publishes FMRs only for metropolitan areas as a whole. For the 1997 GPCI office rental index, HER used a special tabulation of the 1990 Decennial Census to allocate rents by county within large metropolitan areas (Consolidated Metropolitan Statistical Areas or CMSAs). In some metropolitan areas, this had the effect of reducing the central city index below the suburban index, probably because of lower unmeasured housing quality in central cities than suburbs. This is probably not an appropriate indicator of relative physician office rents, since the GPCI index is intended to measure rental costs for offices of similar quality in different areas. The metropolitan-wide rent is most appropriate for measuring the cost for space of an average quality across the metropolitan area, which is the reason HUD publishes only metropolitan-wide FMRs. Also, the Census county adjustments can be updated only once every ten years, and become increasingly out of date between Censuses.

For these reasons, HER believes that the county-specific adjustment should not be made for all large metropolitan areas, but should be retained only for the New York City Primary Metropolitan Statistical Area (PMSA code = 5600). Available evidence suggests that rents vary substantially among the boroughs of New York City and that, given the current FSA configuration, the county-specific rental adjustment appropriately reflects these patterns in the New York City area (Pope *et al.*, 1994). In particular, higher rents in Manhattan are measured.

The two rental indices shown in Table 3-2 use the same FY 1996 FMR data, but differ in which large metropolitan areas a county-specific rental adjustment is made. The index labeled "1997 methodology" makes this adjustment within all Consolidated Metropolitan Statistical Areas. The index labeled "1999 methodology" makes a county adjustment only within the New York City Primary Metropolitan Statistical Area. The change in methodology increases the rental index by three percent or more in only three FSAs. Similarly, only three FSAs lose more than three percent in their rental index.

TABLE 3-2

1999 RENTAL INDEX, 1999 METHODOLOGY VERSUS 1997 METHODOLOGY, BY 1997 FEE SCHEDULE AREA (IN DESCENDING ORDER OF DIFFERENCE)

Carrier Number	Locality Number	Fee Schedule Area	1999 RENTAL INDEX 1999 Methodology	1999 RENTAL INDEX 1997 Methodology	Difference	Percent Difference
00901	99	REST OF MARYLAND	1.020	0.957	0.063	6.6 %
00700	99	REST OF MASSACHUSETTS	1.162	1.114	0.048	4.3
00621	16	CHICAGO, IL	1.207	1.172	0.035	3.0
00865	01	METROPOLITAN PHILADELPHIA, PA	1.162	1.141	0.021	1.8
00824	01	COLORADO	0.956	0.946	0.010	1.1
00623	99	REST OF MICHIGAN	0.829	0.819	0.010	1.2
00542	06	SAN MATEO, CA	1.629	1.621	0.008	0.5
00951	00	WISCONSIN	0.854	0.848	0.006	0.7
01390	99	REST OF WASHINGTON	0.957	0.952	0.005	0.5
00901	01	BALTIMORE/SURR. CNTYS, MD	1.027	1.022	0.005	0.5
10490	00	VIRGINIA	0.881	0.877	0.004	0.5
00860	01	NORTHERN NJ	1.415	1.412	0.003	0.2
00900	99	REST OF TEXAS	0.791	0.788	0.003	0.4
00630	00	INDIANA	0.806	0.804	0.002	0.2
00900	31	AUSTIN, TX	1.118	1.117	0.001	0.1
01040	01	ATLANTA, GA	1.034	1.033	0.001	0.1
00803	01	MANHATTAN, NY	1.808	1.807	0.001	0.1
00900	28	FORT LAUDERDALE, FL	1.114	1.113	0.001	0.1
00542	09	SANTA CLARA, CA	1.548	1.547	0.001	0.1
01120	01	HAWAII	1.639	1.638	0.001	0.1
00820	01	NORTH DAKOTA	0.761	0.760	0.001	0.1
01030	00	ARIZONA	0.955	0.954	0.001	0.1
00825	21	WYOMING	0.769	0.768	0.001	0.1
00751	01	MONTANA	0.766	0.765	0.001	0.1
01380	99	REST OF OREGON	0.899	0.898	0.001	0.1
01360	05	NEW MEXICO	0.844	0.843	0.001	0.1
01040	99	REST OF GEORGIA	0.765	0.764	0.001	0.1
10250	00	MISSISSIPPI	0.705	0.704	0.001	0.1
00801	99	REST OF NEW YORK	0.915	0.914	0.001	0.1
00880	01	SOUTH CAROLINA	0.795	0.794	0.001	0.1
00900	20	BEAUMONT, TX	0.758	0.757	0.001	0.1
00590	99	REST OF FLORIDA	0.936	0.935	0.001	0.1
16510	16	WEST VIRGINIA	0.659	0.658	0.001	0.2
16360	00	OHIO	0.812	0.811	0.001	0.1
21200	99	REST OF MAINE	0.827	0.826	0.001	0.1
00973	50	VIRGIN ISLANDS	1.309	1.308	0.001	0.1
01020	01	ALASKA	1.265	1.264	0.001	0.1
00780	40	NEW HAMPSHIRE	1.091	1.090	0.001	0.1
21200	03	SOUTHERN MAINE	1.119	1.118	0.001	0.1
14330	04	QUEENS, NY	1.466	1.465	0.001	0.1
00870	01	RHODE ISLAND	1.111	1.110	0.001	0.1
02050	18	LOS ANGELES	1.466	1.465	0.001	0.1
00590	04	MIAMI, FL	1.232	1.231	0.001	0.1
02050	26	ANAHEIM/SANTA ANA, CA	1.474	1.473	0.001	0.1
10230	00	CONNECTICUT	1.313	1.312	0.001	0.1
02050	17	VENTURA, CA	1.329	1.328	0.001	0.1
00910	09	UTAH	0.827	0.827	0.000	0.0
00820	02	SOUTH DAKOTA	0.809	0.809	0.000	0.0
00900	09	BRAZORIA, TX	1.001	1.001	0.000	0.0
05130	00	IDAHO	0.801	0.801	0.000	0.0
00528	99	REST OF LOUISIANA	0.721	0.721	0.000	0.0
00660	00	KENTUCKY	0.719	0.719	0.000	0.0
05535	00	NORTH CAROLINA	0.817	0.817	0.000	0.0
00865	99	REST OF PENNSYLVANIA	0.825	0.825	0.000	0.0

TABLE 3-2

1999 RENTAL INDEX, 1999 METHODOLOGY VERSUS 1997 METHODOLOGY, BY 1997 FEE SCHEDULE AREA (IN DESCENDING ORDER OF DIFFERENCE)

Carrier Number	Locality Number	Fee Schedule Area	1999 RENTAL INDEX: 1999 Methodology	1999 RENTAL INDEX: 1997 Methodology	Difference	Percent Difference
00650	00	KANSAS*	0.772	0.772	0.000	0.0 %
00740	04					
00640	00	IOWA	0.778	0.778	0.000	0.0
00900	15	GALVESTON, TX	0.910	0.910	0.000	0.0
00528	01	NEW ORLEANS, LA	0.826	0.826	0.000	0.0
01290	00	NEVADA	1.079	1.079	0.000	0.0
00621	99	REST OF ILLINOIS	0.756	0.756	0.000	0.0
00510	00	ALABAMA	0.713	0.713	0.000	0.0
00520	13	ARKANSAS	0.698	0.698	0.000	0.0
00655	00	NEBRASKA	0.770	0.770	0.000	0.0
10240	00	MINNESOTA	0.896	0.896	0.000	0.0
00621	12	EAST ST. LOUIS, IL	0.787	0.787	0.000	0.0
00740	02	METROPOLITAN KANSAS CITY, MO	0.828	0.828	0.000	0.0
05440	35	TENNESSEE	0.758	0.758	0.000	0.0
00740	99	REST OF MISSOURI*	0.656	0.656	0.000	0.0
11260	99					
11260	01	METROPOLITAN ST. LOUIS, MO	0.807	0.807	0.000	0.0
01370	00	OKLAHOMA	0.713	0.713	0.000	0.0
00780	50	VERMONT	0.980	0.980	0.000	0.0
00973	20	PUERTO RICO	0.715	0.715	0.000	0.0
00542	07	OAKLAND/BERKLEY, CA	1.339	1.339	0.000	0.0
00580	01	DC +MD/VA SUBURBS	1.335	1.335	0.000	0.0
02050	99	REST OF CALIFORNIA*	1.068	1.069	-0.001	-0.1
00542	99					
00803	02	NYC SUBURBS/LONG I., NY	1.535	1.537	-0.002	-0.1
00900	11	DALLAS, TX	1.005	1.008	-0.003	-0.3
01380	01	PORTLAND, OR	1.006	1.012	-0.006	-0.6
00900	18	HOUSTON, TX	0.972	0.978	-0.006	-0.6
00803	03	POUGHKPSIE/N NYC SUBURBS, NY	1.305	1.311	-0.006	-0.5
00860	99	REST OF NEW JERSEY	1.261	1.268	-0.007	-0.6
00542	05	SAN FRANCISCO, CA	1.629	1.638	-0.009	-0.5
00570	01	DELAWARE	1.013	1.023	-0.010	-1.0
00542	03	MARIN/NAPA/SOLANO, CA	1.346	1.361	-0.015	-1.1
01390	02	SEATTLE (KING CNTY), WA	1.162	1.181	-0.019	-1.6
00590	03	FORT WORTH, TX	0.921	0.941	-0.020	-2.1
00623	01	DETROIT, MI	0.971	1.022	-0.051	-5.0
00700	01	METROPOLITAN BOSTON	1.366	1.419	-0.053	-3.7
00621	15	SUBURBAN CHICAGO, IL	1.207	1.312	-0.105	-8.0

* Payment locality is serviced by two carriers.

NOTE: Not adjusted for budget neutrality.

SOURCE: Health Economics Research, Inc.

The increase for the "Rest of Maryland" FSA primarily occurs because Frederick county, Maryland is assigned the higher Washington, D.C. average FMR, without the downward county-specific adjustment it formerly received. Several counties in eastern Massachusetts receive a higher metropolitan Boston FMR, raising the rental index for the "Rest of Massachusetts" FSA, and lowering it for the "Metropolitan Boston" FSA. The FMRs for the "Chicago" and "Suburban Chicago" FSAs are equated under the new methodology, raising Chicago's rental index and lowering the suburban index.

3.3 Final 1999 Office Rental Index

The final 1999 office rental index reflects three changes from the 1997 office rental index:

1. the 1999 index uses final FY 1996 HUD FMRs rather than FY 1994 FMRs;

2. in the 1999 index, a county-specific adjustment for within-metropolitan area rents is made only for the New York City Primary Metropolitan Statistical Area ; and

3. the 1999 index is weighted by 1994 county practice expense relative value unit weights rather than 1992 weights.

Table 3-3 shows changes in the office rental index between 1997 and 1999 by FSA. The changes are a combination of the changes observed from new data (Table 3-1) and the methodological change (Table 3-2). Overall, the new FMR data has a more pronounced effect on the final 1999 index. Except for the Virgin Islands, Ventura, California, and the "Rest of Maryland" FSAs, changes in overall payments (the GAF) resulting from updating the office rental index are less than one percent.

TABLE 3-3

FINAL 1999 OFFICE RENTAL INDEX VERSUS 1997 RENTAL INDEX BY 1997 FEE SCHEDULE AREA
(IN DESCENDING ORDER OF DIFFERENCE)

Carrier Number	Locality Number	Fee Schedule Area	RENTAL INDEX 1999	RENTAL INDEX 1997	Difference	Percent Difference
00973	50	VIRGIN ISLANDS	1.309	1.089	0.220	20.2 %
00901	99	REST OF MARYLAND	1.020	0.916	0.104	11.4
00824	01	COLORADO	0.956	0.871	0.085	9.8
01380	01	PORTLAND, OR	1.006	0.923	0.083	9.0
01020	01	ALASKA	1.265	1.190	0.075	6.3
00910	09	UTAH	0.827	0.753	0.074	9.8
00820	02	SOUTH DAKOTA	0.809	0.740	0.069	9.3
00820	01	NORTH DAKOTA	0.761	0.695	0.066	9.5
01030	00	ARIZONA	0.955	0.892	0.063	7.1
01390	99	REST OF WASHINGTON	0.957	0.896	0.061	6.8
00900	31	AUSTIN, TX	1.118	1.061	0.057	5.4
00825	21	WYOMING	0.769	0.714	0.055	7.7
00751	01	MONTANA	0.766	0.713	0.053	7.4
00900	09	BRAZORIA, TX	1.001	0.957	0.044	4.6
05130	00	IDAHO	0.801	0.761	0.040	5.3
01380	99	REST OF OREGON	0.899	0.860	0.039	4.5
00528	99	REST OF LOUISIANA	0.721	0.682	0.039	5.7
01360	05	NEW MEXICO	0.844	0.811	0.033	4.1
00621	16	CHICAGO, IL	1.207	1.175	0.032	2.7
01040	99	REST OF GEORGIA	0.765	0.734	0.031	4.2
00660	00	KENTUCKY	0.719	0.690	0.029	4.2
00900	99	REST OF TEXAS	0.791	0.762	0.029	3.8
10250	00	MISSISSIPPI	0.705	0.678	0.027	4.0
05535	00	NORTH CAROLINA	0.817	0.791	0.026	3.3
00901	01	BALTIMORE/SURR. CNTYS, MD	1.027	1.003	0.024	2.4
00951	00	WISCONSIN	0.854	0.830	0.024	2.9
00700	99	REST OF MASSACHUSETTS	1.162	1.138	0.024	2.1
00865	99	REST OF PENNSYLVANIA	0.825	0.801	0.024	3.0
00801	99	REST OF NEW YORK	0.915	0.892	0.023	2.6
00650	00	KANSAS*	0.772	0.751	0.021	2.8
00740	04					
00880	01	SOUTH CAROLINA	0.795	0.774	0.021	2.7
00900	20	BEAUMONT, TX	0.758	0.737	0.021	2.8
00640	00	IOWA	0.778	0.758	0.020	2.6
01040	01	ATLANTA, GA	1.034	1.017	0.017	1.7
00623	99	REST OF MICHIGAN	0.829	0.813	0.016	2.0
00900	11	DALLAS, TX	1.005	0.990	0.015	1.5
00900	15	GALVESTON, TX	0.910	0.896	0.014	1.6
00590	99	REST OF FLORIDA	0.936	0.922	0.014	1.5
00528	01	NEW ORLEANS, LA	0.826	0.812	0.014	1.7
16510	16	WEST VIRGINIA	0.659	0.646	0.013	2.0
01390	02	SEATTLE (KING CNTY), WA	1.162	1.149	0.013	1.1
01290	00	NEVADA	1.079	1.066	0.013	1.2
10490	00	VIRGINIA	0.881	0.869	0.012	1.4
00621	99	REST OF ILLINOIS	0.756	0.745	0.011	1.5
00510	00	ALABAMA	0.713	0.703	0.010	1.4
00520	13	ARKANSAS	0.698	0.688	0.010	1.5
00655	00	NEBRASKA	0.770	0.760	0.010	1.3
00900	18	HOUSTON, TX	0.972	0.964	0.008	0.8
10240	00	MINNESOTA	0.896	0.888	0.008	0.9
00803	03	POUGHKPSIE/N NYC SUBURBS, NY	1.305	1.298	0.007	0.5
00621	12	EAST ST. LOUIS, IL	0.787	0.784	0.003	0.4
00740	02	METROPOLITAN KANSAS CITY, MO	0.828	0.827	0.001	0.1
05440	35	TENNESSEE	0.758	0.757	0.001	0.1

TABLE 3-3

FINAL 1999 OFFICE RENTAL INDEX VERSUS 1997 RENTAL INDEX BY 1997 FEE SCHEDULE AREA
(IN DESCENDING ORDER OF DIFFERENCE)

Carrier Number	Locality Number	Fee Schedule Area	RENTAL INDEX 1999	RENTAL INDEX 1997	Difference	Percent Difference
00630	00	INDIANA	0.806	0.805	0.001	0.1 %
00740	99	REST OF MISSOURI*	0.656	0.656	0.000	0.0
11260	99					
16360	00	OHIO	0.812	0.812	0.000	0.0
00803	02	NYC SUBURBS/LONG I., NY	1.535	1.537	-0.002	-0.1
00590	03	FORT WORTH, TX	0.921	0.924	-0.003	-0.3
11260	01	METROPOLITAN ST. LOUIS, MO	0.807	0.810	-0.003	-0.4
01370	00	OKLAHOMA	0.713	0.716	-0.003	-0.4
21200	99	REST OF MAINE	0.827	0.830	-0.003	-0.4
00865	01	METROPOLITAN PHILADELPHIA, PA	1.162	1.168	-0.006	-0.5
00780	40	NEW HAMPSHIRE	1.091	1.101	-0.010	-0.9
21200	03	SOUTHERN MAINE	1.119	1.134	-0.015	-1.3
00570	01	DELAWARE	1.013	1.028	-0.015	-1.5
00780	50	VERMONT	0.980	0.996	-0.016	-1.6
14330	04	QUEENS, NY	1.466	1.484	-0.018	-1.2
00803	01	MANHATTAN, NY	1.808	1.829	-0.021	-1.1
00870	01	RHODE ISLAND	1.111	1.133	-0.022	-1.9
02050	99	REST OF CALIFORNIA*	1.068	1.092	-0.024	-2.2
00542	99					
02050	18	LOS ANGELES	1.466	1.495	-0.029	-1.9
00973	20	PUERTO RICO	0.715	0.751	-0.036	-4.8
00900	28	FORT LAUDERDALE, FL	1.114	1.151	-0.037	-3.2
00590	04	MIAMI, FL	1.232	1.276	-0.044	-3.4
02050	26	ANAHEIM/SANTA ANA, CA	1.474	1.526	-0.052	-3.4
10230	00	CONNECTICUT	1.313	1.367	-0.054	-4.0
00623	01	DETROIT, MI	0.971	1.032	-0.061	-5.9
00700	01	METROPOLITAN BOSTON	1.366	1.433	-0.067	-4.7
00542	07	OAKLAND/BERKLEY, CA	1.339	1.411	-0.072	-5.1
00542	03	MARIN/NAPA/SOLANO, CA	1.346	1.423	-0.077	-5.4
00860	99	REST OF NEW JERSEY	1.261	1.343	-0.082	-6.1
00860	01	NORTHERN NJ	1.415	1.507	-0.092	-6.1
00542	06	SAN MATEO, CA	1.629	1.730	-0.101	-5.8
00542	09	SANTA CLARA, CA	1.548	1.651	-0.103	-6.2
00621	15	SUBURBAN CHICAGO, IL	1.207	1.313	-0.106	-8.1
00542	05	SAN FRANCISCO, CA	1.629	1.748	-0.119	-6.8
00580	01	DC + MD/VA SUBURBS	1.335	1.458	-0.123	-8.4
01120	01	HAWAII/GUAM	1.639	1.785	-0.146	-8.2
02050	17	VENTURA, CA	1.329	1.573	-0.244	-15.5

* Payment locality is serviced by two carriers.

NOTE: Not adjusted for budget neutrality.

SOURCE: Health Economics Research, Inc.

4.0 MALPRACTICE GEOGRAPHIC PRACTICE COST INDEX

The malpractice GPCI (MGPCI) is used to adjust Medicare Fee Schedule (MFS) malpractice relative value units (RVUs) for geographic variation in physician malpractice insurance premiums. As part of the Congressionally-mandated periodic review of the GPCI, updating the current MGPCI is the subject of this chapter. The 1999 MGPCI differs in two significant respects from the 1997 MGPCI: (i) use of more recent insurance premium data, and (ii) weighting specialty premiums by RVUs rather than allowed charges. 1999 MGPCIs are compared to 1997 MGPCIs to determine how each Fee Schedule Area (FSA) is affected by the update.

The rest of this chapter is organized as follows. The history of the MGPCI is reviewed in the next section. This is followed by a discussion of the data used to update the MGPCI, both the premium data and the RVUs used to weight the specialty premiums. A description of the construction of the MGPCI and a comparison of the new 1999 MGPCI to the 1997 MGPCI are presented next. The concluding section summarizes the principal data and methodological changes in the MGPCI.

4.1 History of the MGPCI

The original 1992 MGPCI was "based on 1985 and 1986 premium data for three specialties [general practitioners, general surgeons, and orthopedists] from a relatively small number of insurers (largely St. Paul)."[1] The premium data were derived from HCFA's Survey of Insurers. A subsequent analysis of HCFA's Survey of Insurers concluded that it was representative of too few state markets for malpractice insurance (Zuckerman, Norton, and Wadler, 1992) for the purpose of updating the MGPCI. The use of premiums for only three specialties was also a limitation due to the availability of premiums from HCFA's survey. Zuckerman, Norton, and Wadler showed that the MGPCI could also be sensitive to the number of specialties and incorporation of data from additional insurers. The implication is that a MGPCI broadly based on a large number of specialties and insurers would be more stable and accurate.

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[1] Zuckerman and Norton (1994) is the source for this section. Unless otherwise indicated, all quotes in this section are from Zuckerman and Norton. Items within square brackets were added by us.

In updating the 1992 to the 1996 and 1997 MGPCI, several significant data and methodological improvements were made. One of the most important improvements was the development of a more comprehensive survey of companies and other organizations that underwrite physician malpractice insurance policies. In particular, the premium data collected in this Urban Institute-designed survey resulted in a more representative sample of insurers than hitherto used and an increase in the number of physician specialties represented (see the following section for details). Premium data from 1990 through 1992 were used in the 1996 and 1997 MGPCI. The Urban Institute's criteria for selecting insurance companies for inclusion in the survey were continued by HCFA and its new premium-collection contractor, Allied Technology Group, Inc.

Both the 1992 and 1996/1997 MGPCIs were based on more than one year of premium data. Zuckerman and his associates noticed considerable volatility in premiums from 1985 to 1992. In some cases this was due to tort reform, as in California, which could result in reduced premium levels. The premium volatility could result in a payment locality having a relatively high premium in one year and a relatively low premium in a subsequent year, causing its MGPCI value to fluctuate dramatically. Use of one year of data in constructing the index would thus make the MGPCI very sensitive to the year of data used in its construction. Consequently, multiple years of premiums were used in constructing the indices so that the impact of any one year's premiums on the index was reduced. This is important given the lag between the year(s) of the data and the year of the implementation of the MGPCI. Zuckerman noted that if premiums were relatively stable inter-temporally, then premiums from only one year need to be used to construct the MGPCI.

4.2 Data

Two types of data are discussed in this section: physician malpractice insurance premiums and national malpractice relative value units (RVUs) that are used to weight the premiums to calculate average premiums.

4.2.1 Physician Malpractice Insurance Premiums

The MGPCI is derived from physician malpractice insurance premiums for the top twenty physician specialties (Table 4-1) that account for the majority of Medicare Part B (physician) expenditures. Three years of malpractice premiums were obtained: 1992 from the Urban Institute (UI) and 1993 and 1994 from Allied Technology.[2] The premiums received from both UI and Allied had already been:

- mapped from the rating areas of individual insurers into counties; and
- averaged across insurers for each specialty, by county.

The premiums represent policies with $1 million/$3 million limits of coverage[3] and were collected from both the leading commercial insurers and physician-owned mutual organizations in each state.[4] UI and Allied surveyed the firms that, collectively, accounted for at least 50 percent of the market in each state. UI and Allied adjusted premiums for policies that did not have the standard $1 million/$3 million limits. They performed additional adjustments to premiums in those states that have joint underwriting associations (JUAs) or patient compensatory funds (PCFs). Details on issues concerning premium collection and adjustments can be found in an UI report, *Updating the Geographic Practice Cost Index: The Malpractice GPCI* (Zuckerman and Norton, May 1994).[5]

Premiums for 1993 and 1994 were compared to premiums for 1992 to determine if any geographic area or specialty experienced changes that were inordinately large or small. With one exception, the mean percentage change in premiums by specialty did not exceed, in absolute terms, 20 percent. The exception was for obstetrics/gynecology and is due to a change in the how the specialty category is defined. For the 1997 MGPCI, premiums for a combined obstetrics and gynecology (major surgery) category were used. As pointed out by Allied, elderly women

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[2] Complete data for 1995 premiums were not available in time for inclusion in our analysis.

[3] Specifically, mature claims-made premiums were collected.

[4] The Allied survey had no data for Guam and the Virgin Islands. Guam was assigned Hawaii's index value while the Virgin Islands was assigned an index value equal to 1.000.

[5] A description of Allied s data collection methodology and data editing can be found in Allied Technology, Inc. (1995).

TABLE 4-1

NATIONAL SPECIALTY WEIGHTS FOR THE MALPRACTICE GPCI (MGPCI)

Specialty	Weights used in the 1997 MGPCI*	WEIGHTS FOR THE 1999 MGPCI BASED ON:** Allowed Charges	Malpractice RVUs
General/Family Practice	9.42 %	10.73 %	8.65 %
General Surgery	7.16	6.24	10.63
Otolaryngology	1.25	1.38	1.56
Anesthesiology	4.34	3.96	6.78
Cardiology	9.00	10.95	9.66
Dermatology	2.12	2.73	2.20
Gastroenterology	2.95	3.56	3.02
Internal Medicine	18.46	15.71	11.44
Neurology	1.54	1.91	1.51
Neurosurgery	0.98	1.07	1.88
Obstetrics/Gynecology	0.81	0.95	1.56
Ophthalmology	13.09	12.40	8.02
Orthopedic Surgery	5.62	6.10	10.26
Pathology	1.47	1.69	0.97
Plastic Surgery	0.56	0.61	0.83
Psychiatry	1.64	2.79	2.12
Pulmonary Disease	1.83	2.53	1.82
Radiology	10.27	8.85	9.03
Thoracic Surgery	3.41	2.18	4.61
Urology	4.06	3.66	3.45
Total	99.98	100.00	100.00

NOTES:

*Calculated by the Urban Institute using allowed charges from the 1990 Medicare Part B Annual Data Procedure File.

**Calculated by HER using the 1994 Medicare Part B Annual Data Procedure File.

(the majority of women on Medicare) are unlikely to seek obstetrical services. HCFA concurred with Allied (and Health Economics Research, Inc.) that it was more appropriate to use, for the 1999 MGPCI, premiums for gynecology (major surgery) only rather than a combined obstetrics/gynecology premium. As a consequence of the definitional change, the premiums for the obstetrics/gynecology category are considerably lower in both 1993 and 1994 than in 1992. Although the change in the collected premiums for obstetrics/gynecology causes a discontinuity in the level of the obstetrics/gynecology premium between 1992 and subsequent years, its impact on the MGPCI is likely to be tiny because:

- the obstetrics/gynecology specialty's share of allowed charges or malpractice RVUs is very low (less than two percent), one the lowest among the 20 specialties included in the MGPCI; and
- the MGPCI is based on relative, not absolute, premiums.

In reviewing changes in premiums at the state level, we noticed that premiums did not change between 1993 and 1994 for 26 states. Data collection procedures were reviewed with both UI and Allied because Allied was responsible for premium collection for 1993 and subsequent years. Although not complete, premiums from 1995 were compared to 1994 premiums.[6] Most of the states that did not have premium changes between 1993 and 1994 experienced changes between 1994 and 1995. In addition, the number of states in which premiums did not change between 1994 and 1995 was much lower than in the preceding pair of years, even after allowing for incomplete 1995 data. We concluded that the 1993/94 data were accurate but did not represent the beginning of a period of stable premiums. We, therefore, decided to continue to use three years of premium data (1992 through 1994) in constructing the MGPCI.

4.2.2 Relative Value Units and Allowed Charges by Specialty

In constructing a malpractice premium index using specialty premiums, it is necessary to calculate, for each county, an average premium that is a weighted mean of the specialty premiums. For the 1992 and 1997 MGPCIs, national allowed charge shares were used as the basis

[6] At the time of our analysis, 1995 premiums were available for about 40 states.

of the specialty weights because the more appropriate relative value units (RVUs) were not available. We computed national RVU weights for the 1999 MGPCI. Data necessary to calculate total malpractice RVUs for each specialty were provided by HCFA: the 1994 "RVU File" and the 1994 "Procedure File."

The RVU File contains, for each MFS-covered service, the work, practice expense, and malpractice RVUs for each unit of service. The Procedure File contains, for each procedure-specialty combination, the total units of service performed in 1994. These units of services were multiplied by the malpractice RVUs from the RVU File to obtain total RVUs for each specialty, except anesthesiology (see below). RVU shares, by specialty, are listed in Table 4-1 for 1994. In order to isolate the effects of the change in weighting factor from allowed charges to malpractice RVUs, total allowed charges for each of the 20 specialties listed Table 4-1 were also calculated for 1994 using the 1994 Procedure File. Total RVUs and allowed charges during 1994 were aggregated over the 20 specialties and then each specialty's share of the total was calculated. These shares constitute the national weights used to calculate average malpractice premiums for each county.

Anesthesia procedures are not paid under the MFS, but rather, under a separate system. Anesthesia procedures, as such, do not have RVUs. HCFA, however, publishes in the *Federal Register* (e.g., December 8, 1994) a formula by which to impute RVUs for anesthesia procedures so that they can be compared to the RVUs for MFS-covered procedures. This formula was used to impute RVUs for each anesthesia procedure.

The imputation formula for the total RVUs for a given anesthesia procedure, k, is:

$$\text{Total RVUs}_k = (B_k + T_k) \times \frac{CF_a}{CF_s}$$

B_k and T_k represent the base units and time units, respectively, for anesthesia procedure k. The sum of the base and time units, the national average anesthesia allowance for code k, is multiplied by the ratio of the national anesthesia conversion factor (CF_a) to the national surgical conversion factor (CF_s). The malpractice RVUs for anesthesia procedure k are equal to .073 times the total RVUs. For procedures performed in 1994, the anesthesia conversion factor was 14.20 and the surgical conversion factor was 35.158 (*Federal Register* 58:230, December 2, 1993,

p. 63863). For each "unit" of cataract anesthesia, for example, where B=4 and T=4.74, the total imputed RVUs were 3.4 RVUs and the imputed malpractice RVUs were 0.25.

In changing from allowed charges to malpractice RVUs, higher risk specialties such as the surgical specialties and anesthesiology had the largest increases in shares. Orthopedic surgery had the largest increase, from 5.62 percent to 10.26 percent, and general surgery gained 3.47 percentage points. Conversely, the lower risk specialties tended to have the largest losses in shares with internal medicine falling from 18.46 percent to 11.44 percent; ophthalmology fell by 5.07 percentage points.

The five specialties with the highest weights for the 1997 MGPCI had the five highest weights based on allowed charges for the 1999 MGPCI, albeit with a different rank order: internal medicine, ophthalmology, cardiology, general/family practice, and radiology. When malpractice RVUs are used instead of allowed charges for the 1999 MGPCI, general surgery and orthopedic surgery replace general/family practice and ophthalmology among the specialties with the five highest weights. Otolaryngology, obstetrics/gynecology, pathology, and plastic surgery are among the five specialties with the lowest weights for all three measures. In the malpractice RVU-based weights neurology replaces neurosurgery among the five lowest weighted specialties.

Both sets of 1999 MGPCI weights have a smaller range than the 1997 MGPCI weights. The 1997 MGPCI weights ranged from 18.46 percent to 0.56 percent, a range of 17.9 percentage points. The 1999 MGPCI weights based on allowed charges ranged from 15.71 percent to 0.61 percent, a range of 15.1 percentage points, while the weights based on malpractice RVUs ranged from 11.44 percent (internal medicine) to 0.83 percent (plastic surgery), a range of 10.6 percent. Thus, the 1999 MGPCI weights specialties more equally than the 1997 index.

4.3 Calculation of the Malpractice Geographic Practice Cost Index

The calculation of the MGPCI consists of four major steps. They are as follows.

Step 1: Calculation of weighted county premiums (WCP). The weighted county premium (WCP) is a weighted (arithmetic) mean of the premiums for the 20 specialties listed in Table 4-1. The weight for each specialty premium is also listed in Table 4-1. The formula for the WCP for county i is:

$$WCP_i = \sum_j w_j \cdot P_{i,j}$$

where w_j is the specialty weight and $P_{i,j}$ is specialty j's premium in county i. Since the specialty weights are national values, they do not vary by county.

Step 2: Calculation of weighted Fee Schedule Area premiums. Since most FSAs are composed of more than one county, it is necessary to create a mean premium for the FSA. The weighted FSA premium (FSAP) is a weighted average of the WCP of the counties which comprise the locality. The FSAP for locality (area) k is:

$$FSAP_k = \sum_i l_i \cdot WCP_i$$

where l_i, county i's weight, is the ratio of malpractice RVUs in the county to the total number of malpractice RVUs in FSA k:

$$l_i = \frac{MRVUs_i}{\sum_i MRVUs_i}$$

Step 3: Calculation of weighted national malpractice premium (WNP). The calculation of the weighted national malpractice premium (WNP) is similar to that of each $FSAP_k$:

$$WNP = \sum_k r_k \cdot FSAP_k$$

where the weight r_k for FSA k is the ratio of malpractice RVUs in area k to the total number of malpractice RVUs nationally (excluding Puerto Rico, the Virgin Islands, and Guam).

Step 4: Calculation of Index Values. The malpractice insurance GPCI for FSA k is simply its FSAP divided by the WNP:

$$MGPCI_k = \frac{FSAP_k}{WNP}.$$

The above steps were used to create an index for each of the years 1992 through 1994. The MGPCIs used in the analysis below are an average (simple arithmetic mean) of the three indices. This final step differs from the UI's approach which involved averaging the premiums over three years and then creating an index from the resulting average premiums (Zuckerman and Norton, May 1994). The two methods of averaging the years of premium data are not, except in special circumstances, equivalent even though they produce similar numerical results. The UI approach produces an index that is sensitive to changes in the national average malpractice premium over the three years used in the index, thus requiring adjustments to the national average for price level changes. Our approach of indexing relative to a national average each year, and then averaging annual indices, is not sensitive to changes in the national average.

4.4 Impact of the Updated 1999 MGPCI

The incremental impacts of new malpractice premium data and the change from allowed charge to RVU weights are presented in Tables 4-2 and 4-3, respectively, while overall changes in the MGPCI are presented in Table 4-4. To isolate the effect of new malpractice premium data, a malpractice GPCI for 1999 using allowed charges is compared to the 1997 MGPCI. To isolate the effect of the new specialty weights, two malpractice GPCIs for 1999 were calculated with the new premium data, using RVUs and allowed charges as specialty weights. As will be shown, the effect of new malpractice data is much larger than the effect of the new specialty weights.

Aside from Puerto Rico at 26.7 percent, the Illinois FSAs have the largest percentage increases in the MGPCI, while the two Massachusetts FSAs have the largest percentage decreases at 29.9 percent (Table 4-2).[7] The mean change in the MGPCI, in absolute value, is 8.9 percent, with 30 of the 89 FSAs having changes greater than or equal to ten percent. The impact of the new premiums on payments received by physicians is much smaller than the percentage changes

[7] An examination of premiums by state indicated that Illinois had the largest changes.

TABLE 4-2

CHANGES IN MALPRACTICE GEOGRAPHIC PRACTICE COST INDEX (MGPCI) BETWEEN 1997 AND 1999, USING 1997 METHODOLOGY, BY 1997 FEE SCHEDULE AREA (IN DESCENDING ORDER OF DIFFERENCE)

Carrier Number	Locality Number	Fee Schedule Area	MGPCI 1999	MGPCI 1997	Difference	Percentage Difference
00621	16	CHICAGO, IL	1.670	1.351	0.319	23.6 %
00621	12	EAST ST. LOUIS, IL	1.463	1.175	0.288	24.5
00621	15	SUBURBAN CHICAGO, IL	1.339	1.133	0.206	18.2
00621	99	REST OF ILLINOIS	0.976	0.803	0.173	21.5
00803	02	NYC SUBURBS/LONG I., NY	1.862	1.719	0.143	8.3
00528	01	NEW ORLEANS, LA	1.104	0.975	0.129	13.2
14330	04	QUEENS, NY	1.771	1.648	0.123	7.5
16510	16	WEST VIRGINIA	1.095	0.981	0.114	11.6
01290	00	NEVADA	0.977	0.867	0.110	12.7
02050	18	LOS ANGELES, CA	0.841	0.735	0.106	14.4
02050	26	ANAHEIM/SANTA ANA, CA	0.841	0.735	0.106	14.4
00528	99	REST OF LOUISIANA	0.988	0.891	0.097	10.9
00803	03	POUGHKPSIE/N NYC SUBURBS, NY	1.277	1.191	0.086	7.2
00542	03	MARIN/NAPA/SOLANO, CA	0.668	0.583	0.085	14.6
00542	05	SAN FRANCISCO, CA	0.668	0.583	0.085	14.6
00542	06	SAN MATEO, CA	0.668	0.583	0.085	14.6
00542	07	OAKLAND/BERKLEY, CA	0.668	0.583	0.085	14.6
00542	09	SANTA CLARA, CA	0.668	0.583	0.085	14.6
02050	99	REST OF CALIFORNIA*	0.699	0.614	0.085	13.8
00542	99	}				
00803	01	MANHATTAN, NY	1.593	1.511	0.082	5.4
00780	50	VERMONT	0.521	0.442	0.079	17.9
00780	40	NEW HAMPSHIRE	0.974	0.895	0.079	8.8
00973	20	PUERTO RICO	0.332	0.262	0.070	26.7
05535	00	NORTH CAROLINA	0.485	0.425	0.060	14.1
00570	01	DELAWARE	0.826	0.774	0.052	6.7
02050	17	VENTURA, CA	0.714	0.671	0.043	6.4
00820	01	NORTH DAKOTA	0.641	0.603	0.038	6.3
10490	00	VIRGINIA	0.541	0.506	0.035	6.9
01040	01	ATLANTA, GA	0.915	0.882	0.033	3.7
01040	99	REST OF GEORGIA	0.915	0.882	0.033	3.7
05440	35	TENNESSEE	0.542	0.512	0.030	5.9
01120	01	HAWAII/GUAM	0.928	0.899	0.029	3.2
00630	00	INDIANA	0.377	0.348	0.029	8.3
16360	00	OHIO	1.053	1.025	0.028	2.7
00580	01	DC + MD/VA SUBURBS	0.981	0.958	0.023	2.4
00860	01	NORTHERN NJ	0.768	0.745	0.023	3.1
00860	99	REST OF NEW JERSEY	0.768	0.745	0.023	3.1
00900	11	DALLAS, TX	0.893	0.873	0.020	2.3
00590	03	FORT WORTH, TX	0.893	0.873	0.020	2.3
00900	99	REST OF TEXAS	0.837	0.819	0.018	2.2
00900	31	AUSTIN, TX	0.815	0.808	0.007	0.9
10250	00	MISSISSIPPI	0.710	0.710	0.000	0.0
10230	00	CONNECTICUT	0.972	0.978	-0.006	-0.6
00655	00	NEBRASKA	0.427	0.434	-0.007	-1.6
00901	99	REST OF MARYLAND	0.835	0.843	-0.008	-0.9
00820	02	SOUTH DAKOTA	0.420	0.433	-0.013	-3.0
01390	02	SEATTLE (KING CNTY), WA	0.716	0.731	-0.015	-2.1
01390	99	REST OF WASHINGTON	0.716	0.731	-0.015	-2.1
00751	01	MONTANA	0.718	0.739	-0.021	-2.8
00740	99	REST OF MISSOURI*	1.110	1.133	-0.023	-2.0
11260	99	}				
00520	13	ARKANSAS	0.393	0.417	-0.024	-5.8
00824	01	COLORADO	0.781	0.808	-0.027	-3.3
00623	01	DETROIT, MI	2.953	2.982	-0.029	-1.0
05130	00	IDAHO	0.545	0.575	-0.030	-5.2
00900	18	HOUSTON, TX	1.364	1.396	-0.032	-2.3

TABLE 4-2

CHANGES IN MALPRACTICE GEOGRAPHIC PRACTICE COST INDEX (MGPCI) BETWEEN 1997 AND 1999, USING 1997 METHODOLOGY, BY 1997 FEE SCHEDULE AREA (IN DESCENDING ORDER OF DIFFERENCE)

Carrier Number	Locality Number	Fee Schedule Area	MGPCI 1999	MGPCI 1997	Difference	Percentage Difference
01380	01	PORTLAND, OR	0.591	0.623	-0.032	-5.1 %
01380	99	REST OF OREGON	0.591	0.623	-0.032	-5.1
00901	01	BALTIMORE/SURR. CNTYS, MD	1.056	1.090	-0.034	-3.1
01370	00	OKLAHOMA	0.435	0.470	-0.035	-7.4
00623	99	REST OF MICHIGAN	1.765	1.802	-0.037	-2.1
11260	01	METROPOLITAN ST. LOUIS, MO	1.142	1.180	-0.038	-3.2
00801	99	REST OF NEW YORK	0.764	0.802	-0.038	-4.7
00640	00	IOWA	0.625	0.664	-0.039	-5.9
00740	02	METROPOLITAN KANSAS CITY, MO	1.140	1.180	-0.040	-3.4
00660	00	KENTUCKY	0.760	0.801	-0.041	-5.1
00910	09	UTAH	0.579	0.629	-0.050	-7.9
21200	03	SOUTHERN MAINE	0.690	0.742	-0.052	-7.0
21200	99	REST OF MAINE	0.690	0.742	-0.052	-7.0
00900	09	BRAZORIA, TX	1.333	1.396	-0.063	-4.5
00900	15	GALVESTON, TX	1.333	1.396	-0.063	-4.5
00900	20	BEAUMONT, TX	1.333	1.396	-0.063	-4.5
00510	00	ALABAMA	0.842	0.906	-0.064	-7.1
00865	01	METROPOLITAN PHILADELPHIA, PA	1.200	1.284	-0.084	-6.5
00865	99	REST OF PENNSYLVANIA	0.634	0.719	-0.085	-11.8
00880	01	SOUTH CAROLINA	0.268	0.353	-0.085	-24.1
00825	21	WYOMING	0.705	0.793	-0.088	-11.1
10240	00	MINNESOTA	0.491	0.581	-0.090	-15.5
01020	01	ALASKA	1.483	1.581	-0.098	-6.2
00900	28	FORT LAUDERDALE, FL	1.724	1.825	-0.101	-5.5
00590	99	REST OF FLORIDA	1.282	1.385	-0.103	-7.4
01360	05	NEW MEXICO	0.649	0.774	-0.125	-16.1
00590	04	MIAMI, FL	2.273	2.401	-0.128	-5.3
01030	00	ARIZONA	1.162	1.291	-0.129	-10.0
00700	01	METROPOLITAN BOSTON	0.670	0.956	-0.286	-29.9
00700	99	REST OF MASSACHUSETTS	0.670	0.956	-0.286	-29.9
00650	00	KANSAS*	0.866	1.164	-0.298	-25.6
00740	04					
00951	00	WISCONSIN	0.817	1.134	-0.317	-28.0
00870	01	RHODE ISLAND	1.180	1.534	-0.354	-23.1

* Payment locality is serviced by two carriers

NOTE: Not adjusted for budget neutrality

SOURCE: Health Economics Research, Inc

TABLE 4-3

1999 MALPRACTICE GEOGRAPHIC PRACTICE COST INDEX (MGPCI), ALLOWED CHARGE VERSUS RVU WEIGHTS, BY 1997 FEE SCHEDULE AREA (IN DESCENDING ORDER OF DIFFERENCE)

Carrier Number	Locality Number	Fee Schedule Area	1999 MGPCI RVUs	1999 MGPCI Allowed Charges	Difference	Percentage Difference
10230	00	CONNECTICUT	1.020	0.972	0.048	4.9 %
01360	05	NEW MEXICO	0.694	0.649	0.045	6.9
00623	01	DETROIT, MI	2.975	2.953	0.022	0.7
00660	00	KENTUCKY	0.782	0.760	0.022	2.9
00700	01	METROPOLITAN BOSTON	0.691	0.670	0.021	3.1
00700	99	REST OF MASSACHUSETTS	0.691	0.670	0.021	3.1
00740	02	METROPOLITAN KANSAS CITY, MO	1.159	1.140	0.019	1.7
11260	01	METROPOLITAN ST. LOUIS, MO	1.161	1.142	0.019	1.7
00580	01	DC +MD/VA SUBURBS	1.000	0.981	0.019	1.9
00740	99	REST OF MISSOURI*	1.129	1.110	0.019	1.7
11260	99					
00630	00	INDIANA	0.395	0.377	0.018	4.8
00973	20	PUERTO RICO	0.348	0.332	0.016	4.8
00528	01	NEW ORLEANS, LA	1.118	1.104	0.014	1.3
14330	04	QUEENS, NY	1.782	1.771	0.011	0.6
00528	99	REST OF LOUISIANA	0.999	0.988	0.011	1.1
00803	02	NYC SUBURBS/LONG I., NY	1.873	1.862	0.011	0.6
00803	01	MANHATTAN, NY	1.603	1.593	0.010	0.6
00900	09	BRAZORIA, TX	1.343	1.333	0.010	0.8
00900	15	GALVESTON, TX	1.343	1.333	0.010	0.8
00900	18	HOUSTON, TX	1.374	1.364	0.010	0.7
00900	20	BEAUMONT, TX	1.343	1.333	0.010	0.8
00780	50	VERMONT	0.531	0.521	0.010	1.9
00570	01	DELAWARE	0.834	0.826	0.008	1.0
00901	01	BALTIMORE/SURR. CNTYS, MD	1.064	1.056	0.008	0.8
00780	40	NEW HAMPSHIRE	0.982	0.974	0.008	0.8
00803	03	POUGHKPSIE/N NYC SUBURBS, NY	1.285	1.277	0.008	0.6
00900	11	DALLAS, TX	0.901	0.893	0.008	0.9
00590	03	FORT WORTH, TX	0.901	0.893	0.008	0.9
00900	31	AUSTIN, TX	0.823	0.815	0.008	1.0
00623	99	REST OF MICHIGAN	1.772	1.765	0.007	0.4
00510	00	ALABAMA	0.849	0.842	0.007	0.8
01040	01	ATLANTA, GA	0.922	0.915	0.007	0.8
01040	99	REST OF GEORGIA	0.922	0.915	0.007	0.8
00900	99	REST OF TEXAS	0.844	0.837	0.007	0.8
00801	99	REST OF NEW YORK	0.769	0.764	0.005	0.7
00590	04	MIAMI, FL	2.278	2.273	0.005	0.2
00900	28	FORT LAUDERDALE, FL	1.728	1.724	0.004	0.2
00590	99	REST OF FLORIDA	1.286	1.282	0.004	0.3
05130	00	IDAHO	0.549	0.545	0.004	0.7
00901	99	REST OF MARYLAND	0.839	0.835	0.004	0.5
00640	00	IOWA	0.628	0.625	0.003	0.5
00860	01	NORTHERN NJ	0.771	0.768	0.003	0.4
00860	99	REST OF NEW JERSEY	0.771	0.768	0.003	0.4
00880	01	SOUTH CAROLINA	0.271	0.268	0.003	1.1
01390	02	SEATTLE (KING CNTY), WA	0.719	0.716	0.003	0.4
01390	99	REST OF WASHINGTON	0.719	0.716	0.003	0.4
01020	01	ALASKA	1.486	1.483	0.003	0.2
00655	00	NEBRASKA	0.429	0.427	0.002	0.5
01370	00	OKLAHOMA	0.437	0.435	0.002	0.5
00820	02	SOUTH DAKOTA	0.422	0.420	0.002	0.5
10240	00	MINNESOTA	0.491	0.491	0.000	0.0
10490	00	VIRGINIA	0.540	0.541	-0.001	-0.2
00520	13	ARKANSAS	0.391	0.393	-0.002	-0.5
00951	00	WISCONSIN	0.815	0.817	-0.002	-0.2
00650	00	KANSAS*	0.863	0.866	-0.003	-0.3
00740	04					
05535	00	NORTH CAROLINA	0.482	0.485	-0.003	-0.6
00910	09	UTAH	0.576	0.579	-0.003	-0.5
21200	03	SOUTHERN MAINE	0.686	0.690	-0.004	-0.6

TABLE 4-3

1999 MALPRACTICE GEOGRAPHIC PRACTICE COST INDEX (MGPCI), ALLOWED CHARGE VERSUS RVU WEIGHTS, BY 1997 FEE SCHEDULE AREA (IN DESCENDING ORDER OF DIFFERENCE)

Carrier Number	Locality Number	Fee Schedule Area	1999 MGPCI RVUs	1999 MGPCI Allowed Charges	Difference	Percentage Difference
21200	99	REST OF MAINE	0.686	0.690	-0.004	-0.6 %
01120	01	HAWAII/GUAM	0.924	0.928	-0.004	-0.4
00820	01	NORTH DAKOTA	0.636	0.641	-0.005	-0.8
05440	35	TENNESSEE	0.535	0.542	-0.007	-1.3
00751	01	MONTANA	0.709	0.718	-0.009	-1.3
01030	00	ARIZONA	1.152	1.162	-0.010	-0.9
00824	01	COLORADO	0.771	0.781	-0.010	-1.3
10250	00	MISSISSIPPI	0.699	0.710	-0.011	-1.5
01290	00	NEVADA	0.966	0.977	-0.011	-1.1
16360	00	OHIO	1.041	1.053	-0.012	-1.1
00621	15	SUBURBAN CHICAGO, IL	1.323	1.339	-0.016	-1.2
00621	99	REST OF ILLINOIS	0.960	0.976	-0.016	-1.6
00865	99	REST OF PENNSYLVANIA	0.617	0.634	-0.017	-2.7
02050	17	VENTURA, CA	0.695	0.714	-0.019	-2.7
02050	18	LOS ANGELES, CA	0.820	0.841	-0.021	-2.5
02050	26	ANAHEIM/SANTA ANA, CA	0.820	0.841	-0.021	-2.5
02050	99	REST OF CALIFORNIA*	0.677	0.699	-0.022	-3.1
00542	99					
00825	21	WYOMING	0.683	0.705	-0.022	-3.1
00542	03	MARIN/NAPA/SOLANO, CA	0.646	0.668	-0.022	-3.3
00542	05	SAN FRANCISCO, CA	0.646	0.668	-0.022	-3.3
00542	06	SAN MATEO, CA	0.646	0.668	-0.022	-3.3
00542	07	OAKLAND/BERKLEY, CA	0.646	0.668	-0.022	-3.3
00542	09	SANTA CLARA, CA	0.646	0.668	-0.022	-3.3
00621	12	EAST ST. LOUIS, IL	1.441	1.463	-0.022	-1.5
01380	01	PORTLAND, OR	0.569	0.591	-0.022	-3.7
01380	99	REST OF OREGON	0.569	0.591	-0.022	-3.7
16510	16	WEST VIRGINIA	1.072	1.095	-0.023	-2.1
00870	01	RHODE ISLAND	1.152	1.180	-0.028	-2.4
00621	16	CHICAGO, IL	1.641	1.670	-0.029	-1.7
00865	01	METROPOLITAN PHILADELPHIA, PA	1.170	1.200	-0.030	-2.5

* Payment locality is serviced by two carriers

NOTE: Not adjusted for budget neutrality

SOURCE: Health Economics Research, Inc.

TABLE 4-4

FINAL 1999 MALPRACTICE GEOGRAPHIC PRACTICE COST INDEX (MGPCI) VERSUS 1997 MALPRACTICE GEOGRAPHIC PRACTICE COST INDEX, BY 1997 FEE SCHEDULE AREA
(IN DESCENDING ORDER OF DIFFERENCE)

Carrier Number	Locality Number	Fee Schedule Area	MGPCI 1999	MGPCI 1997	Difference	Percentage Difference
00621	16	CHICAGO, IL	1.641	1.351	0.290	21.5 %
00621	12	EAST ST. LOUIS, IL	1.441	1.175	0.266	22.6
00621	15	SUBURBAN CHICAGO, IL	1.323	1.133	0.190	16.8
00621	99	REST OF ILLINOIS	0.960	0.803	0.157	19.6
00803	02	NYC SUBURBS/LONG I., NY	1.873	1.719	0.154	9.0
00528	01	NEW ORLEANS, LA	1.118	0.975	0.143	14.7
14330	04	QUEENS, NY	1.782	1.648	0.134	8.1
00528	99	REST OF LOUISIANA	0.999	0.891	0.108	12.1
01290	00	NEVADA	0.966	0.867	0.099	11.4
00803	03	POUGHKPSIE/N NYC SUBURBS, NY	1.285	1.191	0.094	7.9
00803	01	MANHATTAN, NY	1.603	1.511	0.092	6.1
16510	16	WEST VIRGINIA	1.072	0.981	0.091	9.3
00780	50	VERMONT	0.531	0.442	0.089	20.1
00780	40	NEW HAMPSHIRE	0.982	0.895	0.087	9.7
00973	20	PUERTO RICO	0.348	0.262	0.086	32.8
02050	18	LOS ANGELES, CA	0.820	0.735	0.085	11.6
02050	26	ANAHEIM/SANTA ANA, CA	0.820	0.735	0.085	11.6
00542	03	MARIN/NAPA/SOLANO, CA	0.646	0.583	0.063	10.8
00542	05	SAN FRANCISCO, CA	0.646	0.583	0.063	10.8
00542	06	SAN MATEO, CA	0.646	0.583	0.063	10.8
00542	07	OAKLAND/BERKLEY, CA	0.646	0.583	0.063	10.8
00542	09	SANTA CLARA, CA	0.646	0.583	0.063	10.8
02050	99	REST OF CALIFORNIA*	0.677	0.614	0.063	10.3
00542	99	}				
00570	01	DELAWARE	0.834	0.774	0.060	7.8
05535	00	NORTH CAROLINA	0.482	0.425	0.057	13.4
00630	00	INDIANA	0.395	0.348	0.047	13.5
00580	01	DC + MD/VA SUBURBS	1.000	0.958	0.042	4.4
10230	00	CONNECTICUT	1.020	0.978	0.042	4.3
01040	01	ATLANTA, GA	0.922	0.882	0.040	4.5
01040	99	REST OF GEORGIA	0.922	0.882	0.040	4.5
10490	00	VIRGINIA	0.540	0.506	0.034	6.7
00820	01	NORTH DAKOTA	0.636	0.603	0.033	5.5
00900	11	DALLAS, TX	0.901	0.873	0.028	3.2
00590	03	FORT WORTH, TX	0.901	0.873	0.028	3.2
00860	01	NORTHERN NJ	0.771	0.745	0.026	3.5
00860	99	REST OF NEW JERSEY	0.771	0.745	0.026	3.5
01120	01	HAWAII/GUAM	0.924	0.899	0.025	2.8
00900	99	REST OF TEXAS	0.844	0.819	0.025	3.1
02050	17	VENTURA, CA	0.695	0.671	0.024	3.6
05440	35	TENNESSEE	0.535	0.512	0.023	4.5
16360	00	OHIO	1.041	1.025	0.016	1.6
00900	31	AUSTIN, TX	0.823	0.808	0.015	1.9
00973	50	VIRGIN ISLANDS	1.000	1.000	0.000	0.0
00901	99	REST OF MARYLAND	0.839	0.843	-0.004	-0.5
00740	99	REST OF MISSOURI*	1.129	1.133	-0.004	-0.4
11260	99	}				
00655	00	NEBRASKA	0.429	0.434	-0.005	-1.2
00623	01	DETROIT, MI	2.975	2.982	-0.007	-0.2
10250	00	MISSISSIPPI	0.699	0.710	-0.011	-1.5
00820	02	SOUTH DAKOTA	0.422	0.433	-0.011	-2.5
01390	02	SEATTLE (KING CNTY), WA	0.719	0.731	-0.012	-1.6
01390	99	REST OF WASHINGTON	0.719	0.731	-0.012	-1.6
11260	01	METROPOLITAN ST. LOUIS, MO	1.161	1.180	-0.019	-1.6
00660	00	KENTUCKY	0.782	0.801	-0.019	-2.4
00740	02	METROPOLITAN KANSAS CITY, MO	1.159	1.180	-0.021	-1.8
00900	18	HOUSTON, TX	1.374	1.396	-0.022	-1.6
05130	00	IDAHO	0.549	0.575	-0.026	-4.5
00520	13	ARKANSAS	0.391	0.417	-0.026	-6.2

TABLE 4-4

FINAL 1999 MALPRACTICE GEOGRAPHIC PRACTICE COST INDEX (MGPCI) VERSUS 1997 MALPRACTICE GEOGRAPHIC PRACTICE COST INDEX, BY 1997 FEE SCHEDULE AREA
(IN DESCENDING ORDER OF DIFFERENCE)

Carrier Number	Locality Number	Fee Schedule Area	MGPCI 1999	MGPCI 1997	Difference	Percentage Difference
00901	01	BALTIMORE/SURR. CNTYS, MD	1.064	1.090	-0.026	-2.4 %
00751	01	MONTANA	0.709	0.739	-0.030	-4.1
00623	99	REST OF MICHIGAN	1.772	1.802	-0.030	-1.7
01370	00	OKLAHOMA	0.437	0.470	-0.033	-7.0
00801	99	REST OF NEW YORK	0.769	0.802	-0.033	-4.1
00640	00	IOWA	0.628	0.664	-0.036	-5.4
00824	01	COLORADO	0.771	0.808	-0.037	-4.6
00900	09	BRAZORIA, TX	1.343	1.396	-0.053	-3.8
00900	15	GALVESTON, TX	1.343	1.396	-0.053	-3.8
00900	20	BEAUMONT, TX	1.343	1.396	-0.053	-3.8
00910	09	UTAH	0.576	0.629	-0.053	-8.4
01380	01	PORTLAND, OR	0.569	0.623	-0.054	-8.7
01380	99	REST OF OREGON	0.569	0.623	-0.054	-8.7
21200	03	SOUTHERN MAINE	0.686	0.742	-0.056	-7.5
21200	99	REST OF MAINE	0.686	0.742	-0.056	-7.5
00510	00	ALABAMA	0.849	0.906	-0.057	-6.3
01360	05	NEW MEXICO	0.694	0.774	-0.080	-10.3
00880	01	SOUTH CAROLINA	0.271	0.353	-0.082	-23.2
10240	00	MINNESOTA	0.491	0.581	-0.090	-15.5
01020	01	ALASKA	1.486	1.581	-0.095	-6.0
00900	28	FORT LAUDERDALE, FL	1.728	1.825	-0.097	-5.3
00590	99	REST OF FLORIDA	1.286	1.385	-0.099	-7.1
00865	99	REST OF PENNSYLVANIA	0.617	0.719	-0.102	-14.2
00825	21	WYOMING	0.683	0.793	-0.110	-13.9
00865	01	METROPOLITAN PHILADELPHIA, PA	1.170	1.284	-0.114	-8.9
00590	04	MIAMI, FL	2.278	2.401	-0.123	-5.1
01030	00	ARIZONA	1.152	1.291	-0.139	-10.8
00700	01	METROPOLITAN BOSTON	0.691	0.956	-0.265	-27.7
00700	99	REST OF MASSACHUSETTS	0.691	0.956	-0.265	-27.7
00650	00	KANSAS*	0.863	1.164	-0.301	-25.9
00740	04					
00951	00	WISCONSIN	0.815	1.134	-0.319	-28.1
00870	01	RHODE ISLAND	1.152	1.534	-0.382	-24.9

* Payment locality is serviced by two carriers

NOTE: Not adjusted for budget neutrality

SOURCE Health Economics Research, Inc

in the MGPCI because the malpractice GPCI's cost share in the overall GPCI is only 4.8 percent. On average, then, there is only about a 0.4 percent change in payment to physicians. Even FSAs with the largest MGPCI changes have small changes in payments, with Puerto Rican physicians receiving about 1.3 percent more and Massachusetts physicians receiving about 1.4 percent less.

In contrast to the changes due to new malpractice premium data, the effects of changing from weighting specialty premiums by allowed charges to RVUs is much smaller. The largest percentage increase in the MGPCI is 6.9 percent and largest decrease is 3.7 percent (Table 4-3). The mean change in the MGPCI, in absolute value, is 1.5 percent with none of the FSAs having changes greater than ten percent. The impact on payments of new specialty weights ranges from an increase of 0.3 percent to a decrease of 0.2 percent, while the average change is about 0.1 percent.

The combined effect of the new premium data and specialty weights is shown in Table 4-4. The combined effects on the MGPCI are about the same as those due solely to the new malpractice premium data with similar maximum, minimum and mean changes. On average, the effect of the new specialty weights is to slightly reduce the impact of new premium data as indicated by the decrease in the mean change, in absolute value, from 8.9 percent (Table 4-2) to 8.7 percent (Table 4-4). The combined effect on physician payments ranges from an increase of 1.6 percent to a decrease of 1.3 percent with a mean change in absolute value of about 0.4 percent. One-third (30 of 89) of the FSAs have changes in the MGPCI that are greater than ten percent or changes in overall payments that exceed 0.5 percent.

4.5 Conclusion

The two most important changes in the second update of the MGPCI are:

- new malpractice premium data that changes the years of premium data used in the malpractice GPCI from 1990, 1991 and 1992 to 1992, 1993, and 1994; and
- a change from national allowed charge to malpractice RVU shares as the basis of weighting specialty premiums in calculating county-level average premiums.

The new malpractice premium data has a much larger effect than the change in specialty weights on the MGPCI. New premium data affects the MGPCI about six times more, on average, than the new specialty weights. The combined effect of the new premium data and specialty weights ranges from an increase of 32.8 percent in Puerto Rico to a decrease of 28.1 percent in Wisconsin with an average change, in absolute value, of 8.7 percent. Although these changes are far from negligible, they are smaller than the changes between the original (1992) MGPCI and its first update (1996). Less volatility in premiums recently than in previous years, and less significant methodological/data modifications account for the smaller changes.

About one-third of the FSAs have changes in the MGPCI exceeding ten percent. Because the MGPCI constitutes only 4.8 percent of the overall GPCI, changes in the MGPCI have a much lesser effect on physician payments. The largest increase in the MGPCI, 32.8 percent in Puerto Rico, increases physician payments by 1.6 percent while the largest decrease, 28.1 percent in Wisconsin, decreases physician payments by 1.3 percent. The mean change, in absolute value, in the MGPCI is 8.7 percent or about a 0.4 percent effect on physician payments.

5.0 1999 VERSUS 1997 PRACTICE EXPENSE GPCI AND GEOGRAPHIC ADJUSTMENT FACTOR

In previous chapters, we reviewed changes in updated versions of two of the three GPCIs--the work GPCI and the malpractice GPCI--as well as in the employee wage and office rental components of the third GPCI, the practice expense GPCI. In this chapter, we examine changes in the overall practice expense GPCI. In addition, we review changes in the Geographic Adjustment Factor that summarizes the impact of geographic adjustments on Medicare Fee Schedule payments.

5.1 1999 Versus 1997 Practice Expense GPCI

As described in Section 1.1, the practice expense GPCI is a combination of the employee wage index and the office rental index:

practice expense GPCI = 0.398·(employee wage index) + 0.251·(office rental index) + 0.351,

where 0.351 is the share of medical supplies, equipment, and miscellaneous in physician practice overhead expenses. The prices of these three inputs are assumed not to vary across areas. The practice expense GPCI can change because of changes in the employee wage index or in the office rental index. (As explained in Section 1. 2, the practice cost share weights were not updated between the 1997 and 1999 GPCIs.)

Table 5-1 shows changes in the practice expense GPCI from 1997 to 1999 by Fee Schedule Area (FSA). In almost all cases, changes in the practice expense GPCI can be traced directly to changes in the office rental index (see Section 3.3), which is the only component of the GPCI to be significantly updated. Changes in the practice expense GPCI are roughly one-quarter of the changes in the office rental index because the rental index comprises about 25 percent of the GPCI. The only update to the employee wage index, which comprises the largest share of the GPCI, is reweighting (see Section 2.5), and the second largest component of the GPCI--supplies, equipment, and miscellaneous--is a constant that did not change.

TABLE 5-1

1999 VERSUS 1997 PRACTICE EXPENSE GEOGRAPHIC PRACTICE COST INDEX (GPCI) BY 1997 FEE SCHEDULE AREA
(IN DESCENDING ORDER OF DIFFERENCE)

Carrier Number	Locality Number	Fee Schedule Area	PRACTICE EXPENSE GPCI 1999	1997	Difference	Percentage Difference
00973	50	VIRGIN ISLANDS	1.033	0.977	0.056	5.7 %
00901	99	REST OF MARYLAND	0.985	0.950	0.035	3.7
01380	01	PORTLAND, OR	1.020	0.999	0.021	2.1
00824	01	COLORADO	0.969	0.950	0.019	2.0
01020	01	ALASKA	1.172	1.154	0.018	1.6
00820	01	NORTH DAKOTA	0.877	0.859	0.018	2.1
00820	02	SOUTH DAKOTA	0.873	0.855	0.018	2.1
00910	09	UTAH	0.908	0.890	0.018	2.0
01030	00	ARIZONA	0.970	0.955	0.015	1.6
01390	99	REST OF WASHINGTON	0.975	0.960	0.015	1.6
00751	01	MONTANA	0.877	0.863	0.014	1.6
00900	31	AUSTIN, TX	0.999	0.985	0.014	1.4
00825	21	WYOMING	0.894	0.880	0.014	1.6
00900	09	BRAZORIA, TX	0.976	0.965	0.011	1.1
05130	00	IDAHO	0.891	0.881	0.010	1.1
00528	99	REST OF LOUISIANA	0.880	0.870	0.010	1.1
00900	99	REST OF TEXAS	0.887	0.878	0.009	1.0
01040	99	REST OF GEORGIA	0.899	0.891	0.008	0.9
00621	16	CHICAGO, IL	1.087	1.079	0.008	0.7
00700	99	REST OF MASSACHUSETTS	1.092	1.084	0.008	0.7
01380	99	REST OF OREGON	0.937	0.929	0.008	0.9
00660	00	KENTUCKY	0.874	0.867	0.007	0.8
01360	05	NEW MEXICO	0.909	0.902	0.007	0.8
00865	99	REST OF PENNSYLVANIA	0.930	0.923	0.007	0.8
00951	00	WISCONSIN	0.932	0.925	0.007	0.8
00650	00	KANSAS *	0.897	0.891	0.006	0.7
00740	04	}				
05535	00	NORTH CAROLINA	0.923	0.917	0.006	0.7
00880	01	SOUTH CAROLINA	0.904	0.898	0.006	0.7
00900	20	BEAUMONT, TX	0.898	0.892	0.006	0.7
00640	00	IOWA	0.881	0.876	0.005	0.6
00590	99	REST OF FLORIDA	0.947	0.943	0.004	0.4
01040	01	ATLANTA, GA	1.033	1.029	0.004	0.4
00528	01	NEW ORLEANS, LA	0.949	0.945	0.004	0.4
10250	00	MISSISSIPPI	0.846	0.842	0.004	0.5
01290	00	NEVADA	1.031	1.027	0.004	0.4
00801	99	REST OF NEW YORK	0.958	0.954	0.004	0.4
00900	11	DALLAS, TX	1.015	1.011	0.004	0.4
00900	15	GALVESTON, TX	0.969	0.965	0.004	0.4
16510	16	WEST VIRGINIA	0.853	0.849	0.004	0.5
00623	99	REST OF MICHIGAN	0.938	0.934	0.004	0.4
00901	01	BALTIMORE/SURR. CNTYS, MD	1.038	1.035	0.003	0.3
00510	00	ALABAMA	0.872	0.869	0.003	0.3
00520	13	ARKANSAS	0.855	0.852	0.003	0.4
00621	99	REST OF ILLINOIS	0.885	0.882	0.003	0.3
00803	03	POUGHKPSIE/N NYC SUBURBS, NY	1.083	1.080	0.003	0.3
10490	00	VIRGINIA	0.940	0.937	0.003	0.3
01390	02	SEATTLE (KING CNTY), WA	1.079	1.076	0.003	0.3
00621	12	EAST ST. LOUIS, IL	0.930	0.928	0.002	0.2
10240	00	MINNESOTA	0.966	0.964	0.002	0.2
00655	00	NEBRASKA	0.873	0.871	0.002	0.2
00900	18	HOUSTON, TX	1.006	1.004	0.002	0.2
00630	00	INDIANA	0.916	0.916	0.000	0.0
00740	02	METROPOLITAN KANSAS CITY, MO	0.948	0.948	0.000	0.0
01370	00	OKLAHOMA	0.881	0.881	0.000	0.0
05440	35	TENNESSEE	0.898	0.898	0.000	0.0
00780	40	NEW HAMPSHIRE	1.032	1.033	-0.001	-0.1
00865	01	METROPOLITAN PHILADELPHIA, PA	1.088	1.089	-0.001	-0.1
21200	99	REST OF MAINE	0.923	0.924	-0.001	-0.1

TABLE 5-1

1999 VERSUS 1997 PRACTICE EXPENSE GEOGRAPHIC PRACTICE COST INDEX (GPCI) BY 1997 FEE SCHEDULE AREA
(IN DESCENDING ORDER OF DIFFERENCE)

Carrier Number	Locality Number	Fee Schedule Area	PRACTICE EXPENSE GPCI 1999	1997	Difference	Percentage Difference
11260	01	METROPOLITAN ST. LOUIS, MO	0.942	0.943	-0.001	-0.1 %
16360	00	OHIO	0.938	0.939	-0.001	-0.1
00590	03	FORT WORTH, TX	0.970	0.971	-0.001	-0.1
00803	02	NYC SUBURBS/LONG I., NY	1.232	1.233	-0.001	-0.1
00570	01	DELAWARE	1.027	1.031	-0.004	-0.4
21200	03	SOUTHERN MAINE	1.029	1.033	-0.004	-0.4
00780	50	VERMONT	0.983	0.987	-0.004	-0.4
00803	01	MANHATTAN, NY	1.352	1.357	-0.005	-0.4
14330	04	QUEENS, NY	1.233	1.238	-0.005	-0.4
00870	01	RHODE ISLAND	1.068	1.073	-0.005	-0.5
00740	99	REST OF MISSOURI*	0.828	0.833	-0.005	-0.6
11260	99					
02050	99	REST OF CALIFORNIA*	1.042	1.048	-0.006	-0.6
00542	99					
02050	18	LOS ANGELES	1.198	1.205	-0.007	-0.6
00973	20	PUERTO RICO	0.729	0.738	-0.009	-1.2
00900	28	FORT LAUDERDALE, FL	1.025	1.035	-0.010	-1.0
00590	04	MIAMI, FL	1.076	1.086	-0.010	-0.9
02050	26	ANAHEIM/SANTA ANA, CA	1.190	1.203	-0.013	-1.1
00700	01	METROPOLITAN BOSTON	1.195	1.211	-0.016	-1.3
00623	01	DETROIT, MI	1.021	1.037	-0.016	-1.5
00542	07	OAKLAND/BERKLEY, CA	1.195	1.213	-0.018	-1.5
00542	03	MARIN/NAPA/SOLANO, CA	1.160	1.179	-0.019	-1.6
10230	00	CONNECTICUT	1.171	1.191	-0.020	-1.7
00860	99	REST OF NEW JERSEY	1.093	1.113	-0.020	-1.8
00860	01	NORTHERN NJ	1.190	1.213	-0.023	-1.9
00542	06	SAN MATEO, CA	1.273	1.298	-0.025	-1.9
00542	09	SANTA CLARA, CA	1.261	1.287	-0.026	-2.0
00621	15	SUBURBAN CHICAGO, IL	1.066	1.092	-0.026	-2.4
00542	05	SAN FRANCISCO, CA	1.298	1.328	-0.030	-2.3
00580	01	DC + MD/VA SUBURBS	1.160	1.191	-0.031	-2.6
01120	01	HAWAII/GUAM	1.182	1.218	-0.036	-3.0
02050	17	VENTURA, CA	1.130	1.191	-0.061	-5.1

* Payment locality is serviced by two carriers

NOTE: Not adjusted for budget neutrality

SOURCE: Health Economics Research, Inc

In all FSAs, changes to the practice expense GPCI are 6 percent or less. Because the practice expense GPCI comprises 41 percent of the overall Geographic Adjustment Factor (GAF), changes in this GPCI translate into a maximum payment impact of 2.5 percent or less. But only a handful of FSAs will see a payment impact of more than one percent from changes in the practice expense GPCI.

5.2 1999 Versus 1997 Geographic Adjustment Factor

The Geographic Adjustment Factor, or GAF, summarizes the overall Medicare Fee Schedule (MFS) geographic adjustment to payment for a service with typical proportions of work, practice expense, and malpractice relative value units (RVUs). It is not used in the MFS payment formula. The GAF is the sum of the three GPCIs, weighted by their shares in overall physician practice revenues:

$$GAF = 0.542 \cdot GPCI_w + 0.410 \cdot GPCI_{pe} + 0.048 \cdot GPCI_m$$

where $GPCI_w$ is the work GPCI, $GPCI_{pe}$ is the practice expense GPCI, and $GPCI_m$ is the malpractice GPCI. The geographic adjustment for any actual service will deviate from the GAF to the extent that the service's proportions of work, practice expense, and malpractice RVUs differ from those of the GAF.

Table 5-2 shows changes in the GAF between 1997 and 1999 by Fee Schedule Area (FSA). All changes are small, less than 2.5 percent. All but 14 of the 89 FSAs will experience a change in payment of less than one percent. Seven areas will gain one percent to 2.4 percent in payment, and seven areas will lose one percent to 2.2 percent. These small changes in the GAF are not surprising given that its two largest components--the physician work GPCI and the employee wage index of the practice expense GPCI--were only reweighted, but not otherwise updated. Moreover, it has been only three years since the last update of the GPCI.

The changes in the GAF can be decomposed into the changes in the four individual input price indices discussed in previous chapters: work, employee wages, office rent, and malpractice insurance premiums. For the most part, changes are due to revisions in the office rental index (comprising about 10 percent of the GAF) and the malpractice GPCI (comprising about 5 percent of the GAF) because the two wage indices are not significantly updated. It is instructive to

TABLE 5-2

1999 VERSUS 1997 GEOGRAPHIC ADJUSTMENT FACTOR (GAF) BY 1997 FEE SCHEDULE AREA
(IN DESCENDING ORDER OF DIFFERENCE)

Carrier Number	Locality Number	Fee Schedule Area	GAF 1999	GAF 1997	Difference	Percent Difference
00973	50	VIRGIN ISLANDS	0.995	0.972	0.023	2.4 %
00621	16	CHICAGO, IL	1.081	1.064	0.017	1.6
00901	99	REST OF MARYLAND	0.978	0.962	0.016	1.7
00621	12	EAST ST. LOUIS, IL	0.986	0.972	0.014	1.4
00528	99	REST OF LOUISIANA	0.934	0.924	0.010	1.1
00621	99	REST OF ILLINOIS	0.931	0.922	0.009	1.0
00528	01	NEW ORLEANS, LA	0.984	0.975	0.009	0.9
00820	01	NORTH DAKOTA	0.905	0.896	0.009	1.0
00803	02	NYC SUBURBS/LONG I., NY	1.173	1.166	0.007	0.6
00820	02	SOUTH DAKOTA	0.885	0.878	0.007	0.8
00900	31	AUSTIN, TX	0.984	0.977	0.007	0.7
01290	00	NEVADA	1.014	1.008	0.006	0.6
00803	03	POUGHKPSIE/N NYC SUBURBS, NY	1.053	1.047	0.006	0.6
01380	01	PORTLAND, OR	0.985	0.979	0.006	0.6
00900	99	REST OF TEXAS	0.928	0.922	0.006	0.7
01390	99	REST OF WASHINGTON	0.967	0.961	0.006	0.6
16510	16	WEST VIRGINIA	0.923	0.917	0.006	0.7
00780	40	NEW HAMPSHIRE	1.006	1.001	0.005	0.5
00824	01	COLORADO	0.969	0.964	0.005	0.5
05535	00	NORTH CAROLINA	0.927	0.922	0.005	0.5
01040	99	REST OF GEORGIA	0.939	0.934	0.005	0.5
01040	01	ATLANTA, GA	1.013	1.009	0.004	0.4
00751	01	MONTANA	0.909	0.905	0.004	0.4
14330	04	QUEENS, NY	1.164	1.160	0.004	0.3
00910	09	UTAH	0.929	0.925	0.004	0.4
05130	00	IDAHO	0.912	0.909	0.003	0.3
10490	00	VIRGINIA	0.945	0.942	0.003	0.3
00780	50	VERMONT	0.956	0.953	0.003	0.3
01020	01	ALASKA	1.128	1.125	0.003	0.3
00900	11	DALLAS, TX	1.007	1.004	0.003	0.3
00630	00	INDIANA	0.926	0.924	0.002	0.2
00660	00	KENTUCKY	0.922	0.920	0.002	0.2
10250	00	MISSISSIPPI	0.899	0.897	0.002	0.2
00803	01	MANHATTAN, NY	1.224	1.222	0.002	0.2
00900	09	BRAZORIA, TX	1.002	1.000	0.002	0.2
02050	18	LOS ANGELES	1.102	1.101	0.001	0.1
01390	02	SEATTLE (KING CNTY), WA	1.022	1.021	0.001	0.1
00640	00	IOWA	0.911	0.910	0.001	0.1
00973	20	PUERTO RICO	0.794	0.793	0.001	0.1
05440	35	TENNESSEE	0.922	0.921	0.001	0.1
00520	13	ARKANSAS	0.886	0.886	0.000	0.0
02050	99	REST OF CALIFORNIA*	1.006	1.006	0.000	0.0
00542	99					
00570	01	DELAWARE	1.013	1.013	0.000	0.0
00655	00	NEBRASKA	0.893	0.893	0.000	0.0
16360	00	OHIO	0.971	0.971	0.000	0.0
01380	99	REST OF OREGON	0.932	0.932	0.000	0.0
00900	18	HOUSTON, TX	1.031	1.031	0.000	0.0
00900	20	BEAUMONT, TX	0.970	0.970	0.000	0.0
00590	03	FORT WORTH, TX	0.976	0.976	0.000	0.0
00825	21	WYOMING	0.923	0.923	0.000	0.0
00621	15	SUBURBAN CHICAGO, IL	1.046	1.047	-0.001	-0.1
01030	00	ARIZONA	0.992	0.993	-0.001	-0.1
00740	02	METROPOLITAN KANSAS CITY, MO	0.980	0.981	-0.001	-0.1
11260	01	METROPOLITAN ST. LOUIS, MO	0.981	0.982	-0.001	-0.1

TABLE 5-2

1999 VERSUS 1997 GEOGRAPHIC ADJUSTMENT FACTOR (GAF) BY 1997 FEE SCHEDULE AREA
(IN DESCENDING ORDER OF DIFFERENCE)

Carrier Number	Locality Number	Fee Schedule Area	GAF 1999	GAF 1997	Difference	Percent Difference
00801	99	REST OF NEW YORK	0.971	0.972	-0.001	-0.1 %
00900	15	GALVESTON, TX	0.997	0.998	-0.001	-0.1
02050	26	ANAHEIM/SANTA ANA, CA	1.089	1.090	-0.001	-0.1
00901	01	BALTIMORE/SURR. CNTYS, MD	1.029	1.030	-0.001	-0.1
00623	99	REST OF MICHIGAN	1.009	1.010	-0.001	-0.1
00510	00	ALABAMA	0.928	0.930	-0.002	-0.2
01360	05	NEW MEXICO	0.933	0.935	-0.002	-0.2
01370	00	OKLAHOMA	0.907	0.909	-0.002	-0.2
00865	99	REST OF PENNSYLVANIA	0.947	0.949	-0.002	-0.2
00880	01	SOUTH CAROLINA	0.912	0.914	-0.002	-0.2
21200	99	REST OF MAINE	0.932	0.935	-0.003	-0.3
10240	00	MINNESOTA	0.956	0.959	-0.003	-0.3
00740	99	REST OF MISSOURI*	0.906	0.909	-0.003	-0.3
11260	99					
00590	99	REST OF FLORIDA	0.978	0.982	-0.004	-0.4
00542	03	MARIN/NAPA/SOLANO, CA	1.056	1.061	-0.005	-0.5
21200	03	SOUTHERN MAINE	0.985	0.990	-0.005	-0.5
00542	07	OAKLAND/BERKLEY, CA	1.085	1.090	-0.005	-0.5
10230	00	CONNECTICUT	1.098	1.104	-0.006	-0.5
00865	01	METROPOLITAN PHILADELPHIA, PA	1.057	1.063	-0.006	-0.6
00860	99	REST OF NEW JERSEY	1.042	1.049	-0.007	-0.7
00623	01	DETROIT, MI	1.126	1.133	-0.007	-0.6
00542	06	SAN MATEO, CA	1.120	1.128	-0.008	-0.7
00542	09	SANTA CLARA, CA	1.124	1.132	-0.008	-0.7
00860	01	NORTHERN NJ	1.098	1.107	-0.009	-0.8
00542	05	SAN FRANCISCO, CA	1.142	1.151	-0.009	-0.8
00900	28	FORT LAUDERDALE, FL	1.043	1.052	-0.009	-0.9
00580	01	DC +MD/VA SUBURBS	1.093	1.103	-0.010	-0.9
00590	04	MIAMI, FL	1.101	1.111	-0.010	-0.9
00700	99	REST OF MASSACHUSETTS	1.028	1.038	-0.010	-1.0
00650	00	KANSAS*	0.931	0.943	-0.012	-1.3
00740	04					
00951	00	WISCONSIN	0.953	0.965	-0.012	-1.2
01120	01	HAWAII/GUAM	1.070	1.083	-0.013	-1.2
00700	01	METROPOLITAN BOSTON	1.086	1.106	-0.020	-1.8
00870	01	RHODE ISLAND	1.045	1.065	-0.020	-1.9
02050	17	VENTURA, CA	1.053	1.077	-0.024	-2.2

* Payment locality is serviced by two carriers.

NOTE: Not adjusted for budget neutrality.

SOURCE: Health Economics Research, Inc.

consider a few specific examples. The Virgin Islands is the largest gainer. This increase is entirely due to a 20 percent gain in the Virgin Island's office rental index (the largest in the nation, see Table 3-3). Chicago is the second largest gainer. Its gain is a combination of a 22 percent increase in its malpractice GPCI (the third largest in the nation, see Table 4-4), and a 3 percent rise in its office rental index (see Table 3-3). Ventura, California suffers the largest decline. This is entirely due to the 16 percent drop in its 1999 office rental index. Rhode Island experiences the second largest decline in its GAF, which is mostly the result of a 25 percent drop in its malpractice GPCI (the fifth largest in the nation, see Table 4-4).

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APPENDIX A

TABLE A-1

1999 GEOGRAPHIC PRACTICE COST INDICES (GPCIs) AND GEOGRAPHIC ADJUSTMENT FACTOR (GAF) BY 1997 FEE SCHEDULE AREA

Carrier Number	Locality Number	State	Fee Schedule Area	Quarter Work GPCI	Practice Expense GPCI	Malpractice GPCI	GAF
00510	00	ALABAMA	ALABAMA	0.978	0.872	0.849	0.928
01020	01	ALASKA	ALASKA	1.063	1.172	1.486	1.128
01030	00	ARIZONA	ARIZONA	0.995	0.970	1.152	0.992
00520	13	ARKANSAS	ARKANSAS	0.953	0.855	0.391	0.886
02050	26	CALIFORNIA	ANAHEIM/SANTA ANA, CA	1.036	1.190	0.820	1.089
02050	18		LOS ANGELES, CA	1.055	1.198	0.820	1.102
00542	03		MARIN/NAPA/SOLANO, CA	1.014	1.160	0.646	1.056
00542	07		OAKLAND/BERKLEY, CA	1.040	1.195	0.646	1.085
00542	05		SAN FRANCISCO, CA	1.067	1.298	0.646	1.142
00542	06		SAN MATEO, CA	1.047	1.273	0.646	1.120
00542	09		SANTA CLARA, CA	1.062	1.261	0.646	1.124
02050	17		VENTURA, CA	1.027	1.130	0.695	1.053
02050	99	}	REST OF STATE*	1.008	1.042	0.677	1.006
00542	99						
00824	01	COLORADO	COLORADO	0.987	0.969	0.771	0.969
10230	00	CONNECTICUT	CONNECTICUT	1.049	1.171	1.020	1.098
00570	01	DELAWARE	DELAWARE	1.019	1.027	0.834	1.013
00580	01	DISTRICT OF COLUMBIA	DC + MD/VA SUBURBS	1.050	1.160	1.000	1.093
00900	28	FLORIDA	FORT LAUDERDALE, FL	0.996	1.025	1.728	1.043
00590	04		MIAMI, FL	1.015	1.076	2.278	1.101
00590	99		REST OF STATE	0.975	0.947	1.286	0.978
01040	01	GEORGIA	ATLANTA, GA	1.006	1.033	0.922	1.013
01040	99		REST OF STATE	0.970	0.899	0.922	0.939
01120	01	HAWAII/GUAM	HAWAII/GUAM	0.998	1.182	0.925	1.070
05130	00	IDAHO	IDAHO	0.960	0.891	0.549	0.912
00621	16	ILLINOIS	CHICAGO, IL	1.027	1.087	1.641	1.081

TABLE A-1

1999 GEOGRAPHIC PRACTICE COST INDICES (GPCIs) AND GEOGRAPHIC ADJUSTMENT FACTOR (GAF) BY 1997 FEE SCHEDULE AREA

Carrier Number	Locality Number	State	Fee Schedule Area	Quarter Work GPCI	Practice Expense GPCI	Malpractice GPCI	GAF
00621	12	ILLINOIS (continued)	EAST ST. LOUIS, IL	0.988	0.930	1.441	0.986
00621	15		SUBURBAN CHICAGO, IL	1.006	1.066	1.323	1.046
00621	99		REST OF STATE	0.963	0.885	0.960	0.931
00630	00	INDIANA	INDIANA	0.981	0.916	0.395	0.926
00640	00	IOWA	IOWA	0.958	0.881	0.628	0.911
00650	00	KANSAS	KANSAS*	0.963	0.897	0.863	0.931
00740	04						
00660	00	KENTUCKY	KENTUCKY	0.970	0.874	0.782	0.922
00528	01	LOUISIANA	NEW ORLEANS, LA	0.998	0.949	1.118	0.984
00528	99		REST OF STATE	0.969	0.880	0.999	0.934
21200	03	MAINE	SOUTHERN MAINE	0.979	1.029	0.686	0.985
21200	99		REST OF STATE	0.961	0.923	0.686	0.932
00901	01	MARYLAND	BALTIMORE/SURR. CNTYS, MD	1.019	1.038	1.064	1.029
00901	99		REST OF STATE	0.985	0.985	0.839	0.978
00700	01	MASSACHUSETTS	METROPOLITAN BOSTON	1.039	1.195	0.691	1.086
00700	99		REST OF STATE	1.010	1.092	0.691	1.028
00623	01	MICHIGAN	DETROIT, MI	1.042	1.021	2.975	1.126
00623	99		REST OF STATE	0.996	0.938	1.772	1.009
10240	00	MINNESOTA	MINNESOTA	0.989	0.966	0.491	0.956
10250	00	MISSISSIPPI	MISSISSIPPI	0.957	0.846	0.699	0.899
00740	02	MISSOURI	METROPOLITAN KANSAS CITY, MO	0.988	0.948	1.159	0.980
11260	01		METROPOLITAN ST. LOUIS, MO	0.994	0.942	1.161	0.981
00740	99		REST OF STATE*	0.945	0.828	1.129	0.906
11260	99						
00751	01	MONTANA	MONTANA	0.951	0.877	0.709	0.909

TABLE A-1

1999 GEOGRAPHIC PRACTICE COST INDICES (GPCIs) AND GEOGRAPHIC ADJUSTMENT FACTOR (GAF) BY 1997 FEE SCHEDULE AREA

Carrier Number	Locality Number	State	Fee Schedule Area	Quarter Work GPCI	Practice Expense GPCI	Malpractice GPCI	GAF
00655	00	NEBRASKA	NEBRASKA	0.949	0.873	0.429	0.893
01290	00	NEVADA	NEVADA	1.005	1.031	0.966	1.014
00780	40	NEW HAMPSHIRE	NEW HAMPSHIRE	0.988	1.032	0.982	1.006
00860	01	NEW JERSEY	NORTHERN NJ	1.057	1.190	0.771	1.098
01360	05	NEW MEXICO	NEW MEXICO	0.973	0.909	0.694	0.933
00803	01	NEW YORK	MANHATTAN, NY	1.093	1.352	1.603	1.224
00803	02		NYC SUBURBS/LONG I., NY	1.067	1.232	1.873	1.173
00803	03		POUGHKPSIE/N NYC SUBURBS, NY	1.010	1.083	1.285	1.053
14330	04		QUEENS, NY	1.057	1.233	1.782	1.164
00801	99		REST OF STATE	0.999	0.958	0.769	0.971
05535	00	NORTH CAROLINA	NORTH CAROLINA	0.970	0.923	0.482	0.927
C0820	01	NORTH DAKOTA	NORTH DAKOTA	0.950	0.877	0.636	0.905
16360	00	OHIO	OHIO	0.990	0.938	1.041	0.971
01370	00	OKLAHOMA	OKLAHOMA	0.969	0.881	0.437	0.907
01380	01	OREGON	PORTLAND, OR	0.996	1.020	0.569	0.985
01380	99		REST OF STATE	0.961	0.937	0.569	0.932
00865	01	PENNSYLVANIA	METROPOLITAN PHILADELPHIA, PA	1.024	1.088	1.170	1.057
00865	99		REST OF STATE	0.989	0.930	0.617	0.947
00973	20	PUERTO RICO	PUERTO RICO	0.882	0.729	0.348	0.794
00870	01	RHODE ISLAND	RHODE ISLAND	1.018	1.068	1.152	1.045
00880	01	SOUTH CAROLINA	SOUTH CAROLINA	0.975	0.904	0.271	0.912
00820	02	SOUTH DAKOTA	SOUTH DAKOTA	0.935	0.873	0.422	0.885
05440	35	TENNESSEE	TENNESSEE	0.975	0.898	0.535	0.922

TABLE A-1

1999 GEOGRAPHIC PRACTICE COST INDICES (GPCIs) AND GEOGRAPHIC ADJUSTMENT FACTOR (GAF) BY 1997 FEE SCHEDULE AREA

Carrier Number	Locality Number	State	Fee Schedule Area	Quarter Work GPCI	Practice Expense GPCI	Malpractice GPCI	GAF
00900	31	TEXAS	AUSTIN, TX	0.986	0.999	0.823	0.984
00900	20		BEAUMONT, TX	0.992	0.898	1.343	0.970
00900	09		BRAZORIA, TX	0.992	0.976	1.343	1.002
00900	11		DALLAS, TX	1.010	1.015	0.901	1.007
00590	03		FORT WORTH, TX	0.987	0.970	0.901	0.976
00900	15		GALVESTON, TX	0.988	0.969	1.343	0.997
00900	18		HOUSTON, TX	1.020	1.006	1.374	1.031
00900	99		REST OF STATE	0.966	0.887	0.844	0.928
00910	09	UTAH	UTAH	0.977	0.908	0.576	0.929
00780	50	VERMONT	VERMONT	0.973	0.983	0.531	0.956
00973	50	VIRGIN ISLANDS	VIRGIN ISLANDS	0.965	1.033	1.000	0.995
10490	00	VIRGINIA	VIRGINIA	0.985	0.940	0.540	0.945
01390	02	WASHINGTON	SEATTLE (KING CNTY), WA	1.005	1.079	0.719	1.022
01390	99		REST OF STATE	0.982	0.975	0.719	0.967
16510	16	WEST VIRGINIA	WEST VIRGINIA	0.963	0.853	1.072	0.923
00951	00	WISCONSIN	WISCONSIN	0.981	0.932	0.815	0.953
00825	21	WYOMING	WYOMING	0.967	0.894	0.683	0.923

* Payment locality serviced by two carriers.

NOTE: Not adjusted for budget neutrality.

SOURCE: Health Economics Research, Inc.

TABLE A-2

1999 GEOGRAPHIC PRACTICE COST INDICES (GPCIs) AND GEOGRAPHIC ADJUSTMENT FACTOR (GAF) BY STATE (IN ALPHABETICAL ORDER)

State	Quarter Work GPCI	Practice Expense GPCI	Malpractice GPCI	GAF
ALABAMA	0.978	0.872	0.849	0.928
ALASKA	1.063	1.172	1.486	1.128
ARIZONA	0.995	0.970	1.152	0.992
ARKANSAS	0.953	0.855	0.391	0.886
CALIFORNIA	1.032	1.134	0.725	1.059
COLORADO	0.987	0.969	0.771	0.969
CONNECTICUT	1.049	1.171	1.020	1.098
DELAWARE	1.019	1.027	0.834	1.013
DISTRICT OF COLUMBIA[1]	1.050	1.160	1.000	1.093
DISTRICT OF COLUMBIA[2]	1.081	1.200	1.278	1.139
FLORIDA	0.987	0.990	1.574	1.016
GEORGIA	0.985	0.954	0.922	0.969
HAWAII/GUAM	0.998	1.182	0.925	1.070
IDAHO	0.960	0.891	0.549	0.912
ILLINOIS	1.001	1.006	1.356	1.020
INDIANA	0.981	0.916	0.395	0.926
IOWA	0.958	0.881	0.628	0.911
KANSAS	0.963	0.897	0.863	0.931
KENTUCKY	0.970	0.874	0.782	0.922
LOUISIANA	0.978	0.903	1.038	0.950
MAINE	0.968	0.965	0.686	0.953
MARYLAND[3]	1.010	1.025	1.009	1.016
MARYLAND[4]	1.017	1.058	1.013	1.034
MASSACHUSETTS	1.025	1.146	0.691	1.059
MICHIGAN	1.021	0.984	2.416	1.073
MINNESOTA	0.989	0.966	0.491	0.956
MISSISSIPPI	0.957	0.846	0.699	0.899
MISSOURI	0.976	0.905	1.150	0.955
MONTANA	0.951	0.877	0.709	0.909
NEBRASKA	0.949	0.873	0.429	0.893
NEVADA	1.005	1.031	0.966	1.014
NEW HAMPSHIRE	0.988	1.032	0.982	1.006
NEW JERSEY	1.045	1.151	0.771	1.075
NEW MEXICO	0.973	0.909	0.694	0.933
NEW YORK	1.049	1.166	1.459	1.117
NORTH CAROLINA	0.970	0.923	0.482	0.927
NORTH DAKOTA	0.950	0.877	0.636	0.905
OHIO	0.990	0.938	1.041	0.971
OKLAHOMA	0.969	0.881	0.437	0.907
OREGON	0.973	0.964	0.569	0.950
PENNSYLVANIA	1.001	0.982	0.794	0.983
PUERTO RICO	0.882	0.729	0.348	0.794
RHODE ISLAND	1.018	1.068	1.152	1.045
SOUTH CAROLINA	0.975	0.904	0.271	0.912
SOUTH DAKOTA	0.935	0.873	0.422	0.885

TABLE A-2

1999 GEOGRAPHIC PRACTICE COST INDICES (GPCIs) AND GEOGRAPHIC ADJUSTMENT FACTOR (GAF) BY STATE (IN ALPHABETICAL ORDER)

State	Quarter Work GPCI	Practice Expense GPCI	Malpractice GPCI	GAF
TENNESSEE	0.975	0.898	0.535	0.922
TEXAS	0.984	0.934	0.964	0.963
UTAH	0.977	0.908	0.576	0.929
VERMONT	0.973	0.983	0.531	0.956
VIRGIN ISLANDS	0.965	1.033	1.000	0.995
VIRGINIA[5]	0.985	0.940	0.540	0.945
VIRGINIA[6]	0.992	0.969	0.558	0.962
WASHINGTON	0.989	1.009	0.719	0.984
WEST VIRGINIA	0.963	0.853	1.072	0.923
WISCONSIN	0.981	0.932	0.815	0.953
WYOMING	0.967	0.894	0.683	0.923

[1] District of Columbia Fees Schedule Area (FSA), including counties in Maryland and Virginia.

[2] District of Columbia only.

[3] Excludes Maryland counties in District of Columbia FSA.

[4] Includes Maryland counties in District of Columbia FSA.

[5] Excludes Virginia counties in the District of Columbia FSA.

[6] Includes Virginia counties in the District of Columbia FSA.

NOTE: Not adjusted for budget neutrality.

SOURCE: Health Economics Research, Inc.

TABLE A-3

1999 EMPLOYEE WAGE INDEX AND OFFICE RENTAL INDEX BY 1997 FEE SCHEDULE AREA
(ALPHABETICAL BY STATE AND FSA NAME WITHIN STATE)

Carrier Number	Locality Number	State	Fee Schedule Area	Employee Wage Index	Office Rental Index
00510	00	ALABAMA	ALABAMA	0.860	0.713
01020	01	ALASKA	ALASKA	1.266	1.265
01030	00	ARIZONA	ARIZONA	0.955	0.955
00520	13	ARKANSAS	ARKANSAS	0.825	0.698
02050	26	CALIFORNIA	ANAHEIM/SANTA ANA	1.179	1.474
02050	18		LOS ANGELES	1.203	1.466
00542	03		MARIN/NAPA/SOLANO	1.184	1.346
00542	07		OAKLAND/BERKLEY	1.275	1.339
00542	05		SAN FRANCISCO	1.353	1.629
00542	06		SAN MATEO	1.289	1.629
00542	09		SANTA CLARA	1.310	1.548
02050	17		VENTURA	1.120	1.329
02050	99	}	REST OF CALIFORNIA*	1.061	1.068
00542	99				
00824	01	COLORADO	COLORADO	0.951	0.956
10230	00	CONNECTICUT	CONNECTICUT	1.250	1.283
00570	01	DELAWARE	DELAWARE	1.061	1.013
00580	01	DISTRICT OF COLUMBIA	DC + MD/VA SUBURBS	1.190	1.335
00900	28	FLORIDA	FORT LAUDERDALE	0.991	1.114
00590	04		MIAMI	1.044	1.232
00590	99		REST OF FLORIDA	0.906	0.936
01040	01	GEORGIA	ATLANTA, GA	1.061	1.034
01040	99		REST OF GEORGIA	0.893	0.765
01120	01	HAWAII/GUAM	HAWAII/GUAM	1.054	1.639
05130	00	IDAHO	IDAHO	0.852	0.801
00621	16	ILLINOIS	CHICAGO	1.087	1.207
00621	12		EAST ST. LOUIS	0.957	0.787
00621	15		SUBURBAN CHICAGO	1.034	1.207
00621	99		REST OF ILLINOIS	0.865	0.756
00630	00	INDIANA	INDIANA	0.912	0.806
00640	00	IOWA	IOWA	0.842	0.778
00650	00	} KANSAS	KANSAS*	0.886	0.772
00740	04				
00660	00	KENTUCKY	KENTUCKY	0.862	0.719
00528	01	LOUISIANA	NEW ORLEANS	0.980	0.826
00528	99		REST OF LOUISIANA	0.875	0.721

TABLE A-3

1999 EMPLOYEE WAGE INDEX AND OFFICE RENTAL INDEX BY 1997 FEE SCHEDULE AREA
(ALPHABETICAL BY STATE AND FSA NAME WITHIN STATE)

Carrier Number	Locality Number	State	Fee Schedule Area	Employee Wage Index	Office Rental Index
21200	03	MAINE	SOUTHERN MAINE	0.997	1.119
21200	99		REST OF MAINE	0.915	0.827
00901	01	MARYLAND	BALTIMORE/SURR. CNTYS	1.078	1.027
00901	99		REST OF MARYLAND	0.948	1.020
00700	01	MASSACHUSETTS	METROPOLITAN BOSTON	1.258	1.369
00700	99		REST OF MASSACHUSETTS	1.125	1.170
00623	01	MICHIGAN	DETROIT	1.072	0.971
00623	99		REST OF MICHIGAN	0.953	0.829
10240	00	MINNESOTA	MINNESOTA	0.980	0.896
10250	00	MISSISSIPPI	MISSISSIPPI	0.809	0.690
00740	02	MISSOURI	METROPOLITAN KANSAS CITY	0.979	0.828
11260	01		METROPOLITAN ST. LOUIS	0.976	0.807
00740	99	}	REST OF MISSOURI*	0.789	0.651
11260	99				
00751	01	MONTANA	MONTANA	0.838	0.766
00655	00	NEBRASKA	NEBRASKA	0.826	0.770
01290	00	NEVADA	NEVADA	1.028	1.078
00780	40	NEW HAMPSHIRE	NEW HAMPSHIRE	1.022	1.091
00860	01	NEW JERSEY	NORTHERN NJ	1.217	1.415
00860	99		REST OF NEW JERSEY	1.070	1.261
01360	05	NEW MEXICO	NEW MEXICO	0.871	0.844
00803	01	NEW YORK	MANHATTAN	1.375	1.808
00803	02		NYC SUBURBS/LONG I.	1.246	1.535
00803	03		POUGHKPSIE/N NYC SUBURBS	1.015	1.305
14330	04		QUEENS	1.292	1.466
00801	99		REST OF NEW YORK	0.951	0.909
05535	00	NORTH CAROLINA	NORTH CAROLINA	0.922	0.817
00820	01	NORTH DAKOTA	NORTH DAKOTA	0.842	0.761
16360	00	OHIO	OHIO	0.963	0.812
01370	00	OKLAHOMA	OKLAHOMA	0.882	0.713
01380	01	OREGON	PORTLAND, OR	1.047	1.006
01380	99		REST OF OREGON	0.906	0.896
00865	01	PENNSYLVANIA	METROPOLITAN PHILADELPHIA	1.118	1.162
00865	99		REST OF PENNSYLVANIA	0.934	0.826
00973	20	PUERTO RICO	PUERTO RICO	0.498	0.715

TABLE A-3

1999 EMPLOYEE WAGE INDEX AND OFFICE RENTAL INDEX BY 1997 FEE SCHEDULE AREA
(ALPHABETICAL BY STATE AND FSA NAME WITHIN STATE)

Carrier Number	Locality Number	State	Fee Schedule Area	Employee Wage Index	Office Rental Index
00870	01	RHODE ISLAND	RHODE ISLAND	1.100	1.111
00880	01	SOUTH CAROLINA	SOUTH CAROLINA	0.887	0.795
00820	02	SOUTH DAKOTA	SOUTH DAKOTA	0.800	0.809
05440	35	TENNESSEE	TENNESSEE	0.895	0.758
00900	31	TEXAS	AUSTIN	0.923	1.118
00900	20		BEAUMONT	0.895	0.758
00900	09		BRAZORIA	0.939	1.001
00900	11		DALLAS	1.034	1.005
00590	03		FORT WORTH	0.976	0.921
00900	15		GALVESTON	0.978	0.910
00900	18		HOUSTON	1.034	0.972
00900	99		REST OF TEXAS	0.847	0.791
00910	09	UTAH	UTAH	0.877	0.827
00780	50	VERMONT	VERMONT	0.969	0.980
00973	50	VIRGIN ISLANDS	VIRGIN ISLANDS	0.887	1.309
10490	00	VIRGINIA	VIRGINIA	0.924	0.881
01390	02	WASHINGTON	SEATTLE (KING CNTY)	1.097	1.162
01390	99		REST OF WASHINGTON	0.966	0.957
16510	16	WEST VIRGINIA	WEST VIRGINIA	0.845	0.659
00951	00	WISCONSIN	WISCONSIN	0.921	0.854
00825	21	WYOMING	WYOMING	0.880	0.769

* Payment locality serviced by two carriers.

NOTE: Not adjusted for budget neutrality.

SOURCE: Health Economics Research, Inc.

TABLE A-4

1999 EMPLOYEE WAGE INDEX AND OFFICE RENTAL INDEX BY STATE
(IN ALPHABETICAL ORDER)

State	Employee Wage Index	Office Rental Index
ALABAMA	0.860	0.713
ALASKA	1.266	1.265
ARIZONA	0.955	0.955
ARKANSAS	0.825	0.698
CALIFORNIA	1.153	1.293
COLORADO	0.951	0.956
CONNECTICUT	1.250	1.283
DELAWARE	1.061	1.013
DISTRICT OF COLUMBIA[1]	1.190	1.335
DISTRICT OF COLUMBIA[2]	1.291	1.335
FLORIDA	0.953	1.036
GEORGIA	0.963	0.875
HAWAII/GUAM	1.054	1.639
IDAHO	0.852	0.801
ILLINOIS	0.997	1.030
INDIANA	0.912	0.806
IOWA	0.842	0.778
KANSAS	0.886	0.772
KENTUCKY	0.862	0.719
LOUISIANA	0.910	0.756
MAINE	0.948	0.943
MARYLAND[3]	1.047	1.025
MARYLAND[4]	1.075	1.112
MASSACHUSETTS	1.194	1.274
MICHIGAN	1.018	0.907
MINNESOTA	0.980	0.896
MISSISSIPPI	0.809	0.690
MISSOURI	0.913	0.759
MONTANA	0.838	0.766
NEBRASKA	0.826	0.770
NEVADA	1.028	1.078
NEW HAMPSHIRE	1.022	1.091
NEW JERSEY	1.157	1.352
NEW MEXICO	0.871	0.844
NEW YORK	1.175	1.384
NORTH CAROLINA	0.922	0.817
NORTH DAKOTA	0.842	0.761
OHIO	0.963	0.812
OKLAHOMA	0.882	0.713

TABLE A-4

1999 EMPLOYEE WAGE INDEX AND OFFICE RENTAL INDEX BY STATE
(IN ALPHABETICAL ORDER)

State	Employee Wage Index	Office Rental Index
OREGON	0.952	0.932
PENNSYLVANIA	0.994	0.936
PUERTO RICO	0.498	0.715
RHODE ISLAND	1.100	1.111
SOUTH CAROLINA	0.887	0.795
SOUTH DAKOTA	0.800	0.809
TENNESSEE	0.895	0.758
TEXAS	0.916	0.870
UTAH	0.877	0.827
VERMONT	0.969	0.980
VIRGIN ISLANDS	0.887	1.309
VIRGINIA[5]	0.924	0.881
VIRGINIA[6]	0.959	0.944
WASHINGTON	1.007	1.022
WEST VIRGINIA	0.845	0.659
WISCONSIN	0.921	0.854
WYOMING	0.880	0.769

[1] District of Columbia Fees Schedule Area (FSA), including counties in Maryland and Virginia.

[2] Distnct of Columbia only.

[3] Excludes Maryland counties in District of Columbia FSA.

[4] Includes Maryland counties in District of Columbia FSA.

[5] Excludes Virginia counties in the District of Columbia FSA.

[6] Includes Virginia counties in the District of Columbia FSA.

NOTE: Not adjusted for budget neutrality.

SOURCE: Health Economics Research, Inc.

APPENDIX B

TABLE B-1

COUNTIES INCLUDED IN 1997 FEE SCHEDULE AREAS
(ALPHABETICALLY BY STATE AND FSA NAME WITHIN STATE)

Carrier Number	Locality Number	State	Fee Schedule Area	Counties
00510	00	ALABAMA	STATEWIDE	ALL COUNTIES
01020	01	ALASKA	STATEWIDE	ALL COUNTIES
01030	00	ARIZONA	STATEWIDE	ALL COUNTIES
00520	13	ARKANSAS	STATEWIDE	ALL COUNTIES
02050	26	CALIFORNIA	ANAHEIM/SANTA ANA	ORANGE
02050	18		LOS ANGELES	LOS ANGELES
00542	03		MARIN/NAPA/SOLANO	MARIN, NAPA, AND SOLANO
00542	07		OAKLAND/BERKLEY	ALAMEDA AND CONTRA COSTA
00542	05		SAN FRANCISCO	SAN FRANCISCO
00542	06		SAN MATEO	SAN MATEO
00542	09		SANTA CLARA	SANTA CLARA
02050	17		VENTURA	VENTURA
02050	99	}	REST OF STATE*	ALL OTHER COUNTIES
00542	99			
00824	01	COLORADO	STATEWIDE	ALL COUNTIES
10230	00	CONNECTICUT	STATEWIDE	ALL COUNTIES
00570	01	DELAWARE	STATEWIDE	ALL COUNTIES
00580	01	DISTRICT OF COLUMBIA	DC + MD/VA SUBURBS	DISTRICT OF COLUMBIA; ALEXANDRIA CITY, ARLINGTON, FAIRFAX, FAIRFAX CITY, FALLS CHURCH CITY IN VIRGINIA; MONTGOMERY AND PRINCE GEORGE'S IN MARYLAND
00900	28	FLORIDA	FORT LAUDERDALE	BROWARD, COLLIER, INDIAN RIVER, LEE, MARTIN, PALM BEACH, AND ST. LUCIE
00590	04		MIAMI	DADE AND MONROE
00590	99		REST OF STATE	ALL OTHER COUNTIES
01040	01	GEORGIA	ATLANTA	BUTTS, CHEROKEE, CLAYTON, COBB, DEKALB, DOUGLAS, FAYETTE, FORSYTH, FULTON, GWINNETT, HENRY, NEWTON, PAULDING, ROCKDALE AND WALTON
01040	99		REST OF STATE	ALL OTHER COUNTIES
01120	01	HAWAII/GUAM	STATEWIDE	ALL COUNTIES
05130	00	IDAHO	STATEWIDE	ALL COUNTIES
00621	16	ILLINOIS	CHICAGO	COOK
00621	12		EAST ST. LOUIS	BOND, CALHOUN, CLINTON, JERSEY, MACOUPIN, MADISON, MONROE, MONTGOMERY, RANDOLPH, ST. CLAIR AND WASHINGTON
00621	15		SUBURBAN CHICAGO	DUPAGE, KANE, LAKE AND WILL
00621	99		REST OF STATE	ALL OTHER COUNTIES
00630	00	INDIANA	STATEWIDE	ALL COUNTIES
00640	00	IOWA	STATEWIDE	ALL COUNTIES
00650	00	} KANSAS	STATEWIDE*	ALL COUNTIES
00740	04			
00660	00	KENTUCKY	STATEWIDE	ALL COUNTIES

TABLE B-1

COUNTIES INCLUDED IN 1997 FEE SCHEDULE AREAS
(ALPHABETICALLY BY STATE AND FSA NAME WITHIN STATE)

Carrier Number	Locality Number	State	Fee Schedule Area	Counties
00528	01	LOUISIANA	NEW ORLEANS	JEFFERSON, ORLEANS, PLAQUEMINES AND ST. BERNARD
00528	99		REST OF STATE	ALL OTHER COUNTIES
21200	03	MAINE	SOUTHERN MAINE	CUMBERLAND AND YORK
21200	99		REST OF STATE	ALL OTHER COUNTIES
00901	01	MARYLAND	BALTIMORE/SURR. CNTYS	ANNE ARUNDEL, BALTIMORE, BALTIMORE CITY, CARROLL, HARFORD AND HOWARD
00901	99		REST OF STATE	ALL OTHER COUNTIES EXCEPT MONTGOMERY AND PRINCE GEORGE'S
00700	01	MASSACHUSETTS	METROPOLITAN BOSTON	MIDDLESEX, NORFOLK AND SUFFOLK
00700	99		REST OF STATE	ALL OTHER COUNTIES
00623	01	MICHIGAN	DETROIT	MACOMB, OAKLAND, WASHTENAW AND WAYNE
00623	99		REST OF STATE	ALL OTHER COUNTIES
10240	00	MINNESOTA	STATEWIDE	ALL COUNTIES
10250	00	MISSISSIPPI	STATEWIDE	ALL COUNTIES
00740	02	MISSOURI	METROPOLITAN KANSAS CITY	CLAY, JACKSON AND PLATTE
11260	01		METROPOLITAN ST. LOUIS	JEFFERSON, ST. CHARLES, ST. LOUIS AND ST. LOUIS CITY
00740	99	}	REST OF STATE*	ALL OTHER COUNTIES
11260	99			
00751	01	MONTANA	STATEWIDE	ALL COUNTIES
00655	00	NEBRASKA	STATEWIDE	ALL COUNTIES
01290	00	NEVADA	STATEWIDE	ALL COUNTIES
00780	40	NEW HAMPSHIRE	STATEWIDE	ALL COUNTIES
00860	01	NEW JERSEY	NORTHERN NJ	BERGEN, ESSEX, HUDSON, HUNTERDON, MIDDLESEX, MORRIS, PASSAIC, SOMERSET, SUSSEX, UNION AND WARREN
00860	99		REST OF STATE	ALL OTHER COUNTIES
01360	05	NEW MEXICO	STATEWIDE	ALL COUNTIES
00803	01	NEW YORK	MANHATTAN	NEW YORK
00803	02		NYC SUBURBS/LONG ISLAND	BRONX, KINGS, NASSAU, RICHMOND, ROCKLAND, SUFFOLK AND WESTCHESTER
00803	03		POUGHKPSIE/N NYC SUBURBS	COLUMBIA, DELAWARE, DUTCHESS, GREENE, ORANGE, PUTNAM, SULLIVAN AND ULSTER
14330	04		QUEENS	QUEENS
00801	99		REST OF STATE	ALL OTHER COUNTIES
05535	00	NORTH CAROLINA	STATEWIDE	ALL COUNTIES
00820	01	NORTH DAKOTA	STATEWIDE	ALL COUNTIES
16360	00	OHIO	STATEWIDE	ALL COUNTIES
01370	00	OKLAHOMA	STATEWIDE	ALL COUNTIES
01380	01	OREGON	PORTLAND	CLACKAMAS, MULTNOMAH AND WASHINGTON
01380	99		REST OF STATE	ALL OTHER COUNTIES

TABLE B-1

COUNTIES INCLUDED IN 1997 FEE SCHEDULE AREAS
(ALPHABETICALLY BY STATE AND FSA NAME WITHIN STATE)

Carrier Number	Locality Number	State	Fee Schedule Area	Counties
00865	01	PENNSYLVANIA	METROPOLITAN PHILADELPHIA	BUCKS, CHESTER, DELAWARE, MONTGOMERY AND PHILADELPHIA
00865	99		REST OF STATE	ALL OTHER COUNTIES
00973	20	PUERTO RICO	PUERTO RICO	ALL COUNTY EQUIVALENTS
00870	01	RHODE ISLAND	STATEWIDE	ALL COUNTIES
00880	01	SOUTH CAROLINA	STATEWIDE	ALL COUNTIES
00820	02	SOUTH DAKOTA	STATEWIDE	ALL COUNTIES
05440	35	TENNESSEE	STATEWIDE	ALL COUNTIES
00900	31	TEXAS	AUSTIN	TRAVIS
00900	20		BEAUMONT	JEFFERSON
00900	09		BRAZORIA	BRAZORIA
00900	11		DALLAS	DALLAS
00590	03		FORT WORTH	TARRANT
00900	15		GALVESTON	GALVESTON
00900	18		HOUSTON	HARRIS
00900	99		REST OF STATE	ALL OTHER COUNTIES
00910	09	UTAH	STATEWIDE	ALL COUNTIES
00780	50	VERMONT	STATEWIDE	ALL COUNTIES
00973	50	VIRGIN ISLANDS	VIRGIN ISLANDS	ALL COUNTY EQUIVALENTS
10490	00	VIRGINIA	STATEWIDE	ALL COUNTIES, EXCEPT ALEXANDRIA CITY, ARLINGTON, FAIRFAX, FAIRFAX CITY, AND FALLS CHURCH CITY
01390	02	WASHINGTON	SEATTLE (KING CNTY)	KING
01390	99		REST OF STATE	ALL OTHER COUNTIES
16510	16	WEST VIRGINIA	STATEWIDE	ALL COUNTIES
00951	00	WISCONSIN	STATEWIDE	ALL COUNTIES
00825	21	WYOMING	STATEWIDE	ALL COUNTIES

* Payment locality is serviced by two carriers.

SOURCE: Health Economics Research, Inc

APPENDIX C

APPENDIX C

ALLOCATION OF RELATIVE VALUE UNITS TO COUNTIES

Relative Value Units (RVUs) by county are used to weight the GPCI input price indices. HCFA created a special database for use in allocating RVUs to counties. Before this database could be used, HER reconciled zip codes that HCFA was unable to match to a county and performed adjustments for other data anomalies. Both HCFA's and HER's procedures are described in detail below.

RVU weights for 1994 were accumulated and extracted from the National Claims History (NCH) Physician Zipcode Summary File by HCFA/DBMS at the request of HCFA/ORD. The data were summarized by unique combination of physician zip code, Medicare carrier and locality number, and the year (calendar 1994) that the expenditure was incurred. The resultant dataset contained 62,035 observations. HCFA then used the zip code to assign FIPS state and county designations by comparison to a July, 1995 Post Office zip code crosswalk file. There were 2,001 observations (3.2%) for which no matching zip codes were found on the Post Office file. Included in this data were 41 observations which had no zip code recorded. The task of assigning FIPS codes to these records was then passed on to HER staff.

HER's primary strategy consisted of manual and computer-based research using several available in-house reference sources. These included geographic files resident in our desktop mapping software; in-house zip code to FIPS crosswalks for 1988, 1990 and 1994; publications from 1988 and 1990 in our reference library; and public databases available through the Internet. For those zip codes which remained unidentifiable, we contacted the pertinent Medicare carriers and solicited corrections. Through these procedures, we were able to assign FIPS codes to 645 of the 2,001 observations, leaving a total of 1,356 observations without FIPS codes. While this represents 2.2 percent of the records in the entire dataset, it only accounts for 0.1 percent of the total RVUs.

For the remaining 1,356 observations without a FIPS code, partial zip codes were used as the basis of assignment of RVUs to counties. In general, the first three zip code digits define a more specific geographic area than do carrier/locality designations. However, since three-digit zip codes cross county boundaries, the RVUs associated with these zip codes need to be allocated to the pertinent counties. Consequently, the RVUs associated with each observation were

allocated based on the first three digits of the zip code or, for invalid zip codes (128 records), the associated carrier/locality code, using county level population from the 1990 U.S. Census as a weighting factor. After performing this allocation, there were ten observations which were both unassignable by the first three zip code digits and had invalid carrier/locality designations. These observations were deleted from the file along with 73 observations for Railroad Board retirees. The total RVUs associated with these deleted records were statistically negligible, representing only 0.0006 percent of the total RVUs in the original dataset.

Upon evaluation of the dataset after all assignment and allocation procedures were complete, it was apparent that St. Louis City in Missouri exhibited inordinately high RVUs. Investigation revealed that the St. Louis zip code in which the activity was reported was not in fact a "physician zip code," but was a P.O. box used by the claims processor for two carriers - one in Missouri (11260) and one in Maryland (00690). Further investigation indicated that activity for these carriers was being recorded primarily in this single zip code and county, rather than in the actual counties where physician services were being rendered. Consequently, the RVUs associated with this zip code for each carrier were allocated by carrier to the associated counties using the 1990 county level census population as a weighting factor.

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